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Let the Figures Decide.

IN the statistics of the output of India-rubber from Pará, contained in the February number of this journal, it was shown that during 1892 the shipments to the United States amounted in round numbers to 25,000,000 pounds, while the shipments to Europe were less than 16,000,000 pounds. The same figures appear in the *India-Rubber and Gutta Percha Trades Journal*, of London, with the comment that these figures do not convey an exact showing of the relative consumption of India-rubber on the two continents, for the reason that a portion of the rubber imported by the United States is transshipped across the Atlantic. The impression which the comment of our contemporary is intended to convey is that American factories consume less rubber than is shown by these figures, while those on the other side consume more. It is true that some Pará rubber arriving at American ports is exported to Europe, but the amount is so small as scarcely to be appreciable as a factor in our handling of rubber. On the other hand, a very large amount of the rubber received direct in Great Britain is speedily shipped to other countries, an important share of it coming to the United States. All of the Pará rubber received at Boston, by the way, is borne on steamers from Liverpool. No figures exist to show the exact amount of Para rubber exported either by the United States, or any country in Europe. The table which follows, however, is of interest as showing the relative imports and consumption of rubber of all grades in the United States and Great Britain for the last two years. It appears from the figures given that out of more than 37,000,000 pounds of rubber received by this country in 1892, less than 1,000,000 pounds were exported, whereas, out of a much smaller total receipt of rubber by Great Britain, considerably more than one-half was exported, leaving for consumption and stocks in the latter country little more than one-third as much rubber as remained for like purposes in the United States. The table follows:

COMMODITIES.	UNITED STATES.		GREAT BRITAIN.	
	1891.	1892.	1891.	1892.
India-Rubber:				
Imports ..... pounds	37,401,634	37,421,981	31,231,640	30,482,256
Exports .. .... "	1,723,258	936,550	17,500,896	16,867,312
Consumption .. "	35,678,376	36,424,531	13,730,844	13,614,944
Gutta-Percha:				
Imports ..... pounds	802,474	559,968	6,822,032	5,095,664
Exports ..... "	56,444	4,063	717,696	894,768
Consumption .. "	746,030	555,905	6,104,336	4,200,896

This table, which was prepared before the arrival in our office of our London contemporary, contains also a showing with regard to Gutta percha, in the consumption of which European countries do largely exceed the manufacturers of America. It may be added, however, that the English consumption of India-rubber and Gutta-percha combined is scarcely more than one-half of the consumption of these commodities on this side of the Atlantic.

"The Sap of the Para Tree."

IT has not been long since THE INDIA RUBBER WORLD quoted from an esteemed daily contemporary some expressions with relation to the rubber industry, one of which conveyed the interesting information that "all rubber must first be vulcanized. In fact *it is para and not rubber*, and not fit for use, until vulcanized. This is a heating process which gives to the material its durability and elasticity." Now comes the leading newpaper in a great State, with more surprising facts, for the writer goes more into details. Some quotations may be made that will be of interest to rubber-men.

"The finest quality of rubber," says this newspaper, "is made from the sap of the para tree, which grows abundantly in the Congo-river regions of southern Africa." This, it is stated, retails at $2 a pound, but a cheaper grade of rubber is made from the sap of the caoutchouc tree, growing in the West Indies and South America. A third and very cheap quality of rubber, we learn, is produced from the sap of a vine, much resembling the common ivy, found in the forests of southern Africa. "It is from this that all the cheaper grade of rubber goods, such as overshoes, are made."

This cheap vine-product, the writer proceeds, comes from the forests in "black chunks" smaller than hen's eggs, with about the consistency of putty. It is mixed in manufacture with "Spanish whiting, lime, zinc, or rags," according to the quality of rubber which is desired. The result is "the hard, coarse quality of goods, which it does not take the eye of an expert to detect when placed besides the better quality of wares made from the para or caoutchouc." But para comes to the factory in fifty-pound pieces which look "very much like one had taken huge rolls of sole-leather and cut them into chunks about one foot in diameter." The details of manufacturing "para" are stated at considerable length. But feeling that the ambitious reporter must have stolen them from the new rubber-factory which has recently been opened in his town, we do not think that it would be right to extend their circulation where they might reach the eyes of competing manufacturers.

It is customary for the organizers of "trusts" to conduct their monopolistic schemes in the dark, and several hundred daily newspapers have vaguely warned the public to be wide-awake, lest the new United States Rubber Co. should take advantage of it in some way. It remains for our western contemporary, however, to come to the front with information of a practical character, such as showing that rubber shoes are made from the coarse product of the sap of the African vine, mixed with Spanish whiting and rags. Certainly Mr. Banigan, or Mr. Converse, or Mr. Watkinson—even though they may have indulged hitherto in the same practice—will now be shrewd enough to come to the front with a new grade of overshoes made from pure Congo para, and, by the superior excellence of their product, drive the "trust" and all their other competitors, filled with confusion, from the field.

Let us have no rags in our para.

AN ACROSTIC.

BY AN ADMIRING SUBSCRIBER.

In close-fitting pale blue dress, with somber decoration,
Neat-formed, bright-faced, an object of admiration,
Deserving well the name proud-borne—distinguished appellation—
Ingratiated in loving hearts throughout a thoughtful nation,
And without a single peer in an elastic education.

Remarkable in character, earnest in tone,
Undoubted authority standing ever alone,
Bountiful in knowledge, imparted with zest,
Bold in utterances, though grandly expressed,
Earnest in argument, yet never offends,
Ready, if wrong, to make prompt amends.

Where'er King Caoutchouc's flag 's unfurled
On river, lake, on land or sea,
Re-echoed plaudits ring forth with glee:
Long live "The India Rubber World!"
Dear friend in blue, the same for thee.

A. D. H.

New Publications.

TIPS TO INVENTORS: TELLING WHAT INVENTIONS ARE NEEDED and How to Perfect and Develop New Ideas in any Lines. By ROBERT GRIMSHAW, Ph. D., M. E. New York: Practical Publishing Co., No. 21 Park row, 1892. [Cloth, 12mo., 84 pp., $1 postpaid.]

THIS book, written by a practical engineer and inventor, is meant to be helpful to beginners in the field in which his own work has been done. A paragraph may be quoted from the book to give an insight into its character, viz.: "There may be those who think that in these pages I discourage invention. I don't. But I think that it is criminal to encourage people who have poor things, or good things that would not be practical to work up, in spending their time and money in inventing and patenting."

With reference to uninvented inventions in the rubber field Mr. Grimshaw writes: "There are many mineral hydrocarbons which it would pay to 'vulcanize' as India-rubber and Gutta percha are now. . . . . What is not known about 'vulcanizing' India-rubber, Gutta-percha, and other similar substances, would fill a large volume. Get up a process for recovering India-rubber out of old vulcanized articles, and another for vulcanizing the material so that it will not get soft by heat or brittle by cold. . . . In the manufacture of emery wheels a bond is desirable which will possess the advantages both of India-rubber and of silicate."

THE "SHOE AND LEATHER REPORTER" ANNUAL FOR 1893. NEW York, Boston, etc.: The *Shoe and Leather Reporter*. [Cloth, large octavo, pp. 783, price, $3.]

THIS valuable publication has steadily grown in size and completeness until it has become one of the most important trade-annuals published. In addition to a summary of "facts and figures for reference," it contains a list of manufacturers of and dealers in shoes and all commodities pertaining to the shoe industry in the United States, which apparently embraces the name of every house, large or small, in the trade. There are also the names of leading houses in the trade in other parts of the world. This volume will prove of interest to the rubber trade, for the reason that it contains the names of nearly all the houses through which the rubber boot- and shoe-product of the country reaches the consumers.

THE DECAY OF INDIA-RUBBER.

*By Henry J. Williams, Chemist.**

THE decay of India-rubber is a subject of very great interest to the rubber-manufacturer, and one in which too little experimenting has been done. Many of the changes which India-rubber goods undergo are too little understood, although a careful and systematic study of the conditions to which the articles are subjected ought to reveal the cause of the trouble. One fact, however, has been amply verified by experiment and research: the destruction of India-rubber, however brought about, is simply a greater or less degree of oxidation of the mass entering into the composition of the goods. The facts which follow, taken largely from a lecture delivered before the Owens College Chemical Society by Dr. Charles A. Burghardt, in 1883, are of value and doubtless will prove of interest to the readers of this journal.

Caoutchouc, when it has undergone complete oxidation, consists principally of a hard, brown, transparent, shellac-like resin. This resin acts like an acid, and combines readily with soda or potash to form soaps which are soluble in cold or hot water. Spiller described this peculiar resin some years ago. He found it to contain 27.3 per cent. of oxygen. In addition to this resin there is another body present in decomposed caoutchouc, also hard and resinous in character, but it is not soluble in caustic alkalies, will not form soaps and is quite insoluble in benzol, absolute alcohol, or ether. It contains varying amounts of oxygen, sometimes as much as 20 per cent. Though insoluble in benzol, the last mentioned body swells up in that liquid. There is little doubt that this substance is an oxidation product of the caoutchouc resins induced by the action of oxidizing agents upon these resins, after the goods have been manufactured. That such is the case seems to be proved by the fact that although perfectly new and freshly-vulcanized caoutchouc may contain some 3 per cent. of the acid resin, it never contains any of the insoluble non-acid resin described above.

It is well known that certain animal and vegetable oils exert a highly injurious effect upon caoutchouc, whether vulcanized or not. This subject is far from being thoroughly understood, and authorities differ widely as to the conclusions which they have reached in experiments conducted under apparently similar conditions. Mr. Burghardt maintains that the injurious action of the oil is more marked on non-vulcanized caoutchouc, the extremely hard (still elastic) vulcanized goods being scarcely attacked by oils; also that the thickness of the mass of vulcanized caoutchouc exposed to the action of oil, as well as the quantity of oil used, are important. Thus extremely thin films (such as those seen on single- and double-texture waterproof garments) are acted upon with considerable rapidity by some oils, while the identical sample of caoutchouc compound made into a thicker sheet will withstand the action of the same amount of oil which destroyed the thin films for a considerable length of time without showing any signs of deterioration. On the other hand, if a very large excess of oil is placed upon vulcanized caoutchouc a damage arises which is entirely different in its final stage from that which takes place when only a very small quantity is placed upon it. The reason for this is that the large amount of oil forms a pasty, semi-liquid mass as a result of the decomposition of the caoutchouc. It never becomes resinous or hard, because the oxygen of the air is actually prevented from acting on the products owing to the large excess of oil that is present.

Where a small amount of oil is applied the surface of the India-rubber is softened gradually and swelled out a little; consequently the oxygen of the air can enter the mass with greater ease, thus producing the resinification mentioned above. Sometimes mineral oils will bring about a similar decomposition, owing to their softening action upon the surface of the gum. Olive-oil and palm-oil are exceedingly injurious in their action, as they at once reduce the elasticity of the caoutchouc, 1 per cent. of either of these oils being sufficient to elongate a strip of vulcanized India-rubber sheet, nine inches in length, one inch in three days. To illustrate this action the following experiment was tried:

Strips of vulcanized sheet were first measured and fastened down upon boards with strips of paper marked in inches pasted along their sides. Then about 1 per cent. of olive oil or palm-oil was brushed upon the strips, and the whole left alone for a few days. In three days the strips had lost their elasticity, were looser, somewhat undulating in appearance, and were found to be one inch longer. On increasing the percentage of oil a further increase in length was observed. This experiment proves the injurious effect of olive-oil and palm-oil.

Certain other oils are also more or less injurious, as we shall show later. Certain dyes are also injurious to caoutchouc, particularly if they contain copper compounds. Oxide of copper is extremely injurious, causing the brittle resinification in a short time; its action is very much intensified by the presence of olive-oil or palm-oil.

Vulcanized caoutchouc, when completely oxidized, loses every trace of elasticity and becomes exceedingly brittle, or short and hard. It contains from 5 to 10 per cent. of water, which is given off on heating it from 212° F. to 248° F., whereas India-rubber in sound condition should not contain more than 0.5 per cent. of water. This percentage of inclosed or probably partially combined water is therefore a sort of index to the amount of destruction which the India-rubber has undergone. As a proof of this statement the following example of oxidation of India-rubber may be given: Some elastic thread, made in 1878, of the very best materials, was undergoing slow decomposition in

* Member British Society of Chemical Industry; Deutsche Chemische Gesellschaft, and American Institute of Mining Engineers.

1879, owing to the combined action of olive-oil, copper-oxide, and crude paraffine wax upon it. The thread was somewhat "short," but still retained a considerable amount of elasticity, as it could be stretched to about three times its own length. In March, 1879, it contained 4.77 per cent. of water. The same thread in December, 1882, contained 9.20 per cent. of water. It was examined before driving out the water and was found to have become quite hard, non-elastic, and brittle,—in fact it could be rubbed into a powder.

A further source of injury to vulcanized rubber is the unavoidable presence in it of free or uncombined sulphur. Theoretically, caoutchouc cannot combine chemically with more than 2 to 2 5 per cent. of sulphur. All sulphur present in excess of these amounts exists in the uncombined state and exercises a very injurious action, because the moisture which is always present in the air and the oxygen of the air penetrate gradually the mass of India-rubber, oxidizing the sulphur where it lies and converting it into sulphuric acid, which then attacks the gum itself and eventually renders it rotten and worthless. This action is most evident where the article is a thread or thin film. Manufacturers are supposed to remove all free sulphur from their products by boiling them in an alkaline solution (either carbonate of sodium, caustic soda or caustic potash) until they consider that all free sulphur is extracted. As a rule, in the best vulcanized elastic thread that can be made, an excess of 1.5 to 3 per cent. over and above the theoretical quantity required for perfect vulcanization is always present.

When vulcanized India-rubber decomposes by the action of oils upon it, a certain quantity of the carbon of the gum escapes in the form of carbonic-acid gas, while at the same time the free or uncombined sulphur also escapes, probably in the form of sulphuretted-hydrogen gas. The theoretical quantity of sulphur, *i. e.*, that which is chemically combined with the gum, remains. Oxygen from the air takes the place of the carbon which has escaped. The hydrogen in decomposed vulcanized caoutchouc remains about the same as in the normal vulcanized material, while the water which forms during the decomposition would not seriously affect the percentage of hydrogen, as will be seen from the following analyses of good and damaged thread :

	Carbon.	Hydrogen.	Sulphur.	Oxygen.
1. Normal or theoretical vulcanized thread	87.50	10.00	2.50	...
2. Vulcanized elastic thread, perfectly sound and free from water	77.91	10.33	5.51	6.61
3. Same thread as No. 2, damaged, but still elastic	72.53	11.31	1.97	14.19
4. Same thread as No. 2, damaged, brittle, and hard	70.46	10.59	3.14	15.81
5. Same thread as No. 2, damaged, brittle, and very hard	65.09	10.00	1.95	22.96
6. Same thread as No. 2, damaged, brittle, and very hard	64.00	9.26	2.28	24.46

Examining these results we see that No. 2, which is a perfectly sound vulcanized thread, has lost carbon as it has deteriorated, in No. 6 showing only 64 per cent. The sulphur has decreased from 5.15 per cent. (free and combined sulphur) in No. 2 to 2.28 per cent. (combined sulphur only) in No. 6. The oxygen has risen from 6.61 in the sound thread, to 24.46 per cent. in No. 6, the decayed thread. From these analyses, therefore, there can no longer be any doubt that the percentage of oxygen present in manufactured India-rubber is a sure index of the amount of deterioration which it has undergone in a given time. The maximum amount of oxygen which can be taken up is about 26 per cent. The process of boiling the manufactured articles in caustic alkali also is injurious, on account of its removing from the surfaces of the articles the small quantity of oxidized caoutchouc (soluble resin) upon them, thus rendering the surfaces porous and full of minute rifts and cracks, in which the oxygen of the air can more easily do its work of destruction. Light also exerts an injurious action upon the gum, but only in conjunction with other destructive agents, which it assists in their action ;—alone it probably would not produce any injury to perfectly good normal vulcanized caoutchouc.

Sometimes vulcanized caoutchouc articles are damaged by the use of impure coal-naphtha in their manufacture, the damage in question being a soft, sticky decomposition, which is brought about by the presence in the naphtha of heavy brown coal-tar oils, of high boiling-point. These heavy oils remain in the India-rubber articles after the drying process, on account of their non-volatility at the temperatures generally adopted for the drying of the goods. The further action of oils upon India-rubber articles will be treated in a subsequent paper.

SPONTANEOUS CONVERSION OF ISOPRENE INTO CAOUTCHOUC.

*By William A. Tilden, D.Sc., F.R.S.**

ISOPRENE is a hydrocarbon which was discovered by Greville Williams many years ago among the products of the destructive distillation of India-rubber. Later, in 1884 [Trans. Chem. Soc., 45, 410], it was observed by myself among the more volatile compounds obtained by the action of a moderate heat upon oil of turpentine and other terpenes. It is a very volatile liquid, boiling at about 36°. Its molecular formula is C_5H_8, and it forms a tetrabromide $C_5H_8Br_4$, but no metallic derivatives like the two homologues of acetylene.

Bouchardat [Compt. rend. 87, 654, and 89, 361, and 1117] observed that, when isoprene is heated to a temperature near 300°, it gradually polymerises into a terpene, which he called diisoprene, but which is now called dipentene. This compound boils at 176°. A quantity of colophene, similar to that which is produced by the action of heat upon turpentine, is formed at the same time. When isoprene is brought into contact with strong acids,—aqueous hydrochloric acid, for example,—it is converted into a tough elastic solid, which, examined by G. Bouchardat and by myself, appears to be true India-rubber.

* Reprinted from the Proceedings of the Birmingham Philosophical Society.

Specimens of isoprene were made from several terpenes in the course of my work on those compounds, and some of them I have preserved. I was surprised a few weeks ago at finding the contents of the bottles containing isoprene from turpentine entirely changed in appearance. In place of a limpid colorless liquid, the bottle contained a dense syrup in which was floating several large masses of a solid of a yellowish color. Upon examination, this turned out to be India-rubber. The change of isoprene by spontaneous polymerisation has not, to my knowledge, been observed before. I can only account for it by the hypothesis that a small quantity of acetic or formic acid had been produced by the oxidizing action of the air, and that the presence of this compound had been the means of transforming the rest. The liquid was acid to test paper, and yielded a small portion of unchanged isoprene.

The artificial India-rubber, like natural rubber, appears to consist of two substances, one of which is more soluble in benzine or carbon bisulphid than the other.

A solution of the artificial rubber in benzine leaves on evaporation a residue which agrees in all characters with a similar preparation from Pará rubber.

The artificial rubber unites with sulphur in the same way as ordinary rubber, forming a tough elastic compound.

The constitutional formula of isoprene is not known with certainty, but it must be selected from the five following formulæ :—

$CH_3\,CH_2\,CH{=}C{=}CH_2$ .....)
$CH_3\,CH{=}C{=}CHCH_3$ ..... (Derivatives of allene, $CH_2{=}C{=}CH_2$.
$(CH_3)_2\,C{=}C{=}CH_2$ .....)

$CH_3\,CH{=}CH{-}CH{=}CH_2$ ....)
$CH_2{=}CCH_3{-}CH{=}CH_2$ .. .... (Derived from crotonylene, $CH_2{=}CH{-}CH{=}CH_2$.

It is obvious that compounds such as these, containing doubly-linked carbon, may polymerise in a variety of ways; and, in the present condition of our knowledge of the constitution even of isoprene, it would be idle to speculate as to which out of the numerous possible arrangements would correspond to the constitution of caoutchouc.

SOME GUMS USED IN MAKING VARNISH.

THE discovery of varnish is not attributed to any one, nor does any particular nation lay claim to having been the first to produce this now most important commodity, that in so many different forms is used to give brilliancy, finish, and durability, to the thousand-and-one objects that go to make up our modern surroundings, from the ponderous railroad palace-car to the tiny shining button on the baby's shoe. There is little doubt, however, that its manufacture, as understood to-day, is of comparatively recent date, although a crude knowledge of certain varieties of varnish or lacquer is known to have existed at a very remote period.

Before commencing to give a little description of some of the gums used in making varnish it might not be out of place to propose the question, "What is good varnish?" and answer it as we understand it. Good varnish is a composition of oil, gum, and turpentine, so united as to produce a substance which, when applied to the surface of an object, leaves on that object a smooth, glossy, and impervious coating. Its functions are to increase the luster and polish of said surface, and render it more easily kept clean; and further, by its high refractive power, to increase the transparency of surfaces that are by their porous nature rendered too opaque, and thus bring into view any grain or marking of natural growth that it may be desirable to show up; and still further, by its absolute insolubility, to protect perishable objects from the effects of damp or decay.

The most valuable of all fossil gums is a variety exported from Zanzibar, and known as such. The finest quality of it is found on the Wawandi river, and is of a beautiful amber color. The outside of the pieces as found has the appearance of "goose flesh" and is so described. Some authorities have attributed this feature to the result of internal contraction, while others think, and more probably, that the sandy soil, in which it is always found imbedded, may have caused these impressions. Zanzibar has a specific gravity of 1.068, and the melting point is upwards of 450° F.

Other varieties come from Madagascar and Demerara, and are conceded to be the yield of the same species of tree, a genus similar to the *Hymenæa*. The specific gravity of these are lighter than Zanzibar, the Demerara having 1.030 with a melting point similar to Zanzibar.

The West coast of Africa, too, furnishes valuable gums for varnish purposes, the principal varieties being known as Benguela and Angola. These are collected by the Bunda negroes, and are called by them "ocota cocota," or "mucocoto." They are collected in the Congo districts and carried by them to the ports of shipment. The zone in which these copals occur is well defined, being a hilly, desolate tract between the mountains that run parallel with the west coast-line and the low broad land extending to the Atlantic. Only one tree flourishes on this desolate tract, which is about 700 miles long and from 3 to 50 miles, more or less, wide, and this is the "baobab," which thrives either singly or in groups. The botanical source of these copals is not known. Many travelers and scientists have given their views on the subject, but their several deductions do not point to the same conclusion, and the belief prevails that the trees that produced these gums may be extinct.

Manila copals are so called from the fact of Manila being the chief port of shipment in the Philippine Islands, although practically no gum really does come from there. The great bulk of it comes from the Dutch East Indies, and is consigned to Amsterdam, where the principal sales are held. These copals are mostly used on the European continent, and in this country do not find much favor, although some of the better grades very much resemble Kauri in appearance. The botanical source of the Manila copal is unknown.

Fifty years ago the Kauri gum of New Zealand was unknown as a varnish gum. To day it ranks among the most popular. Kauri gum is conceded to have been the resinous exudation of the pine tree of New Zealand, the *Dammara Australis*, and is found in the province of Auckland in open bush land where no vestige of the original trees remains, and is thus a convincing evidence of prehistoric forests. In other parts of the colony living forests exist, whose trees when tapped yield a resinous sap, quantities of which are found at the roots of trees in various stages of hardness between sap and fossil gum. In former days, Kauri was collected by the natives, the Taoris. Whites are now, however, doing a large portion of the digging. There are summer gum fields and winter gum fields. In the winter months it is usual to work on the ridges, because the rains that fall then soften the hard clayey ground and make the digging comparatively easy, at the same time making the depressions un-get-at-able or inconvenient, while in the summer, when the ridges become so hard and dry as to be difficult to work, the lower grounds become the fields of labor. Gum is found at a depth of several feet in the hollows, while on the ridges it is only a few inches below the surface and sometimes protrudes. The specific gravity of Kauri is about 1.080, and its melting point about 400° F.

Gum damar is the exudation of the *Dammara Orientalis*, the trees being periodically tapped for supplies. The principal varieties are Batavia, from Java and Singapore, and Padang, from Sumatra. Damar has a high specific gravity and a low melting point. Other gums are mastic, sandarac, benzoin, and camphor, but these do not play so important a part as the foregoing.—*Kuhlow's Review.*

THE RUBBER-MAT INFRINGEMENT SUIT.

THE decision handed down by Justice Lacombe in the United States Circuit Court of Appeals, in the case of the New York Belting and Packing Co. *vs.* The New Jersey Car Spring and Rubber Co., has been officially printed. Suit was brought, in the Circuit Court in the Southern District of New York, upon letters patent of the United States to George Woffenden, dated March 27, 1879 [Design patent No. 11,208—Design for rubber mats]. A demurrer was interposed to the bill and the patent as to each of its three claims was held void by the Circuit Court. Appeal was taken to the Supreme Court, which reversed the finding of the Circuit Court. Thereafter the case came before the Court of Appeals, which held, in view of the prior state of the art and particularly of an English patent issued in 1860, that Woffenden's patent was limited to the mere design or pattern shown in the drawing, and was not infringed by the designs produced by the defendant.

The claims for the Woffenden patent relate (1) to a design for a rubber mat consisting of corrugations, depressions, or ridges in parallel lines, combined or arranged to produce variegated kaleidoscopic, moiré, stereoscopic, or similar effects; (2) the lines of the said corrugations being deflected at one or more points; (3) the corrugations to be arranged in sections, the general line of direction of the corrugation in one section making angles with or being deflected beneath those of the corrugations in the contiguous or other section.

It is manifest that the drawer of the specifications did not intend thereby to describe a design for a rubber mat, but to cover any and every design, whatever its pattern, which presented the kaleidoscopic, moiré, or stereoscopic effects which are produced by the juxtaposition of parallel corrugations on the surface of rubber when arranged in series or sections of parallels having differing directions. The Supreme Court held that the Circuit Judge was right in holding that the first claim was altogether too broad to be sustained. As to the second and third claims, however, it was held that they "may fairly be regarded as confining the patentee to the specific design exhibited in his patent and shown in the drawing." The opinion of the Supreme Court closes with an intimation that the peculiar kaleidoscopic effects produced by the impression of parallel lines forming a particular design on the surface of rubber "may constitute a quality of excellence which will give to the design a specific character and value and distinguish it from other similar designs that have not such an effect." The Circuit Court "with some hesitation reached the conclusion that under the intimation of the Supreme Court a patent [should] be sustained." Subsequent to the decision of the Supreme Court the holder of the patent filed a disclaimer to the first claim.

The patentee is shown not to have been the first to arrange parallel corrugations on the surface of rubber, grouped in sections and deflected so as to produce changes of light and shade as the position of the observer shifts relatively to the object, thus giving the kaleidoscopic effects described in the patent. An English patent to Fanshawe and Jacques [No. 2935—November 29, 1860] relates to rubber brushes with flexible rubber surfaces in the shape of projecting ridges. While the production

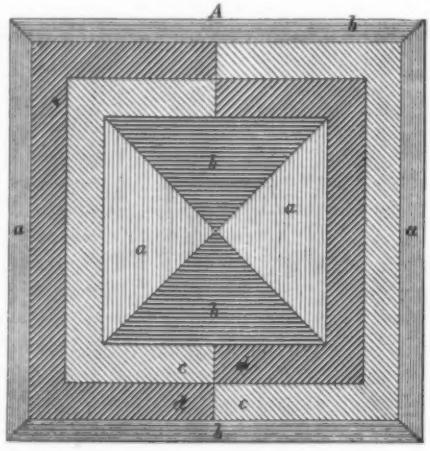


FIGURE 1.

of designs was not the immediate object sought to be attained by the English brush-maker, yet in the face of that English patent it was not open to the patentee of complainant's mat to claim broadly the production of kaleidoscopic and similar effects by such an arrangement of parallel corrugation on the surface of rubber—to claim anything more than the mere design or pattern shown in his drawing. All that was open to him was such an arrangement of the corrugation as would produce a "novel" design, as the Supreme Court defines that word. The drawing of the patent which represents a map embodying the design is shown in Figure 1 and is thus described in the specification:

It is divided into a number of sections *a b c d*, the corrugations or depressions and ridges of those represented by the same letter being parallel. Thus in the center and outer border formed by the sections *a b* the corrugations extend around the mat parallel with its outer edge and with each other. At the points where each depression crosses the diagonals drawn from corner to corner of the mat through the center it makes a right angle with its previous path. In the intermediate borders the corrugations in the sections *c* are arranged at an angle with those in the sections *d*, and in both they form an angle with the corrugations in the sections *a b*. By the different shading of the sections attempt has been made to represent the mosaic effects produced, which, it will be understood, vary like a kaleidoscope as the observer shifts his position.

The record does not disclose any such combination in the prior art, but the design thus shown as a whole is, so far as appears, new, producing new effects. For "the specific design exhibited in [the] patent and shown in the drawing," the patent is, therefore, sustained.

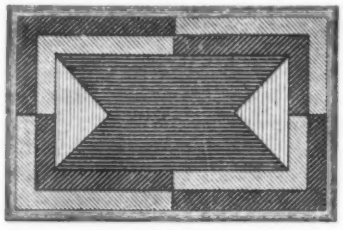


FIGURE 2.

The design of defendant's mat is shown in Figure 2. The differences in the borders of the two mats, according to Justice Lacombe, are not substantial. "But it hardly needs testimony to show . . . that an ordinary observer giving such attention as a purchaser usually gives would not be likely to mistake the oblong mat with its double swallow-tail center for the square mat with its center of four equal triangles presenting the effect of a Maltese cross. The defendant's mat, therefore, is not an infringement of the 'specific design exhibited in the patent and shown in the drawing.'"

The complainant, however, contends that his patent covers not only the square mat shown in the drawing, but also an oblong mat such as the defendant's. The patent in referring to the drawing states that "*A* is the mat which is, as represented, square, although it might be oblong or other desired shape." It is insisted that the complainant should not be limited to a square mat just because he did not by a drawing illustrate its oblong as well as its square form. But according to the learned Justice there must be in changing from the square to the oblong a change of pattern in the central panel,—a change which is not a mere duplication of the details of the original, but a rearrangement of the principal lines of the figure. And such rearrangement is not necessarily confined to a single pattern. One way of rearranging the central panel is shown in the defendant'smat. Other ways are indicated by Figures 3 and 4. It seems impossible to determine from the directions of the patent what is the particular design which the patentee produced for an oblong mat. He has failed to give the description of his oblong mat in such clear and exact terms "as to enable any person skilled in the art to make the same." The necessity of a clear and exact description of his oblong design was not apparent to the patentee because he intended to claim every possible variety of design which by means of parallel corrugations arranged in sections produced kaleidoscopic and similar effects on the surface of rubber. Such exact description was, however, essential to the validity of his patent, in view of the narrow field of invention which was really open to him, for the production of shifting light and shadows by means of corrugations on the surface of many different substances was old and had in the prior art been applied to rubber.

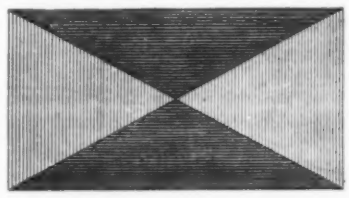


FIGURE 3.

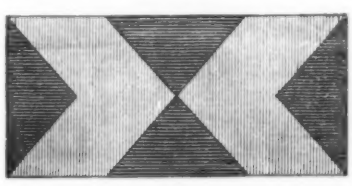


FIGURE 4.

As none of the defendant's mats infringe the only specific design exhibited in the patent and shown in the drawing, the decree of the lower court was reversed, with costs.

BRIEF ABSTRACTS OF RECENT RUBBER PATENTS.

AMONG recent patents issued by the United States Patent Office, embodying applications of India-rubber or Gutta-percha to a greater or less extent, have been the following.

It is not practicable here to do more than to note the use of rubber in each case, with sufficient detail to enable those who are interested to decide whether or not to look into any particular patent more fully:

TIRES.

No. 490,620.—Inflater for Pneumatic Tires. Seele H. Ellis, Waverly, N. Y., assignor to G. S. Scofield and F. M. Scofield, Greenwich, Conn.

The inflater, comprising the box or casing adapted to be rigidly secured to a wheel hub, an air-compressing cylinder and piston in said casing, an oscillating beam or lever connected at one end to said piston, its shaft, the cam arm thereof adapted to engage a projection on the frame when the wheel is revolved, whereby said piston is forced downwardly, the spring for returning said piston, the air-conducting pipe, and a governor operated by back pressure from said pipe to throw the cam arm into and out of position to operate the pump.

No. 491,010.—Pneumatic Tire. Harry Comstock, Fulton, N. Y., assignor of one-half to William J. Watson, same place.

A pneumatic bicycle-tire, consisting of a rawhide tube, a canvas coating cemented to the inside of said tube, a canvas coating cemented to the outside of the said tube, and a rubber tread applied to the canvas covered rawhide cube.

No. 490,655.—Pneumatic Tire for Velocipedes. Rudolph W. Huss, Chicago, Ill., assignor to the American Tire Co., Cleveland, Ohio.

A pneumatic tire comprising an annular tube-holder, an annular tubular air-cushion confined within the annular tube-holder, and an annular band confined within the tube-holder and made of segmental shape in cross-section so as to leave within the said tube holder a tube space which is of segmental area in cross-section.

No. 490,714.—Cushion Tire. Woodburn Langmuir, Toronto, Canada.

As an improved tire, a metal band narrower than, and rigidly secured to the felly, a rubber band substantially the same width as the felly and having an inner recess to fit over the metal band, the outer edges of the rubber band being grooved to receive the flanges formed upon the outer metal band which is shrunk upon the rubber band.

No. 490,827.—Air-Cushion Tire. Joseph P. Lavinge, New Haven, Conn., assignor of one-half to Reuben H. Brown, same place.

An improvement in bicycle-wheels, comprising in combination, a metal rim, a flexible tire, adapted to hold compressed

air, an independent air-chamber, situated between the outer surfaces of the tire and rim, and circumferential therewith, such independent air-chamber adapted to arrest the inward depression of an exhausted or partially exhausted tire by reason of the engagement of the depressed tire with the outer wall thereof.

No. 490,828.—Bicycle-Tire. Joseph P. Lavigne, New Haven, Conn., assignor of one-half to Reuben H. Brown, same place.

An improvement in bicycles, comprising in combination, a pneumatic tire, an air-bulb arranged therein, having inlet and outlet ports, a dust proof nozzle through which air is admitted thereto, an anvil projecting from one of the inner walls of the tire, between which and the base of the air nozzle or other point the said bulb is compressed by the yielding tread of the tire so as to expel air therefrom into the cavity thereof; a normal atmosphere chamber surrounding the bulb to protect it from compressed air in said tire.

No. 490,829.—Self-Holding Tire for Bicycles. Joseph P. Lavigne, New Haven, Conn., assignor of one-half to Reuben H. Brown, same place.

An improvement in bicycle-wheels, comprising in combination a tubular rim which is anchor shape in cross-section, having a reduced shank and enlarged stock portion projecting outward from the rim proper, a pneumetic tire having a grooved depression enlarged at the bottom to fit the stock of the anchor shaped rim, said depression extending within the cavity of the tire, and circumferential therewith, so that, by reason of the formation of the tire and rim and the compressed air within the tire, the same is firmly sustained to the rim.

No. 490,830.—Bicycle-Tire. Joseph P. Lavigne, New Haven, Conn., assignor of one-half to Reuben H. Brown, same place.

The combination with a metal rim and a pneumatic tire, of a flexible air-tube placed between the two and circumferential therewith, one end projecting without the tire and provided with a dust-proof air-nozzle, the other end having a valve opening into the cavity of the tire, said tire and rim so constructed with respect to the position of the air tube that the latter will be compressed by the yielding tread of the tire, and the air forced therefrom into the cavity of said tire.

No. 490,438.—Vehicle-Wheel. Joel H. Hendrick, Springfield, Mass., assignor to the Warwick Cycle Manufacturing Co., same place.

The combination with the trough-shaped section, having its extreme edges bent into hooked lips, of a rim section having inturned portions lying against the inner curved surface of said section, and bent at the edges into hooked lips located inside, the inturned portions to form an open-top groove into which the hooked lips can be set and brazed, and an elastic tire resting in trough-shaped rim section.

No. 490,459.—Cycle-Handle. Alexander Straus, New York, N. Y.

The method of forming a handle, which consists in pasting the broad surfaces of pieces of cork upon the interior surface of a handle-mold, filling the remaining space with a cement of rubber and ground cork, and subjecting the whole to pressure.

No. 490,369.—Means for Plugging Holes in Rubber Fabrics. Thomas B. Sloper, Devizes, England.

The improved pneumatic-tire repairing means, consisting of the hollow expander for entering the puncture and enlarging the same against the resiliency of its walls, and the headed plug or stopper carried in the hollow of the expander and adapted to be discharged with the head within the tire.

No. 490,425.—Tire for Velocipede-Wheels. George D. Chamberlain, Springfield, Mass., assignor to the Warwick Cycle Manufacturing Co., same place.

The combination with a rim having between its one edge and center longitudinal line a longitudinally arranged series of separated hooks, of a pneumatic tire comprising an air-tube of suitable cross sectional form, but having the walls thereof at each underside convergent toward the medium longitudinal line at the inner periphery of the air-tube, whereby the base thereof is so narrowed that it has its support only upon the middle portion of the rim, and a section which covers the tread and sides and has a seat at its opposite edges on the rim outside of the air-ring base, one edge being suitably connected to the rim, the said cover section being provided at its other edge with a series of eyes to engage said hooks.

No. 491,563.—Automatic Inflating Device for Rubber Tires. Robert M. Keating, Springfield, Mass.

The combination of a wheel having an inflatable tire, with an actuating device and pump, the pump having connection with the tire, and the actuating mechanism being mounted upon the rim and connecting with the tire by a rod passing through the inner wall of the tire and connecting with the outer wall or tread, and means to communicate motion from the actuating mechanism to the pump.

No. 491,620.—Pneumatic Tire. Willard A. Warren, Buffalo, N. Y.

The combination with the protective envelope of the tire adapted to bear against the wheel-rim, and provided on its inner side, opposite its tread, with a raised rib or ridge, of a separate inflatable tube, arranged within said envelope, and bearing with its side portions against the adjacent inner wall of the envelope, and resting with its outer side centrally upon said rim or ridge, whereby the contiguous portion of the tube is indented and spaces or recesses are formed on opposite sides of said ridge which separate the tube from the envelope.

No. 491,296.—Pneumatic Tire. Daniel H. Smith, Holyoke, Mass.

The combination with the air-tube of a pneumatic tire, of a tube of thin, impermeable, flexible material located and extended around, within, and near the inner wall of the air-tube, the same being of an apertured construction, that is, open to the communication with the space within the air-tube, so as to receive an equilibrium of the pressure within the tire at opposite sides thereof, whereby when the air-tube is inflated, said inclosed air-tube will neither be collapsed nor, by inflation, forced in tension against the inner wall of the inflated tube.

No. 491,479.—Pneumatic Tire. Christian H. Gray, Silverton, England.

A tubular pneumatic tire, having a tread composed of diagonal ribs extending in reverse direction from its center to its opposite edges.

No. 491,386.—Cycle-Tire. Alexander Straus, New York, N. Y.

Cycle-tire consisting of an inner pneumatic tube and an endless cover wrapped about the same, and having its overlapping edge secured by buttons or studs, and having along the portion next the wheel rim a series of projecting studs adapted to enter apertures in the rim.

No. 492,280.—Wheel. George P. Fisher, Bucyrus, Ohio.

A wheel tire or rim, comprising a series of hollow balls, and a tube fitted closely thereon, and provided internally with passages connecting the spaces between the balls, whereby air may pass the balls to fill the spaces between the same.

MECHANICAL GOODS.

No. 491,443.—Hose-Holder. Lewis F. Pearson, Medicine Lodge, Kans.

In a hose-supporter, the combination with a pair of legs and clamp of a third leg pivoted to the first pair.

No. 491,821.—Hose-Washer. John E. Taber, Fall River, Mass.

The combination with a casing, formed into two communicating compartments, of a perforated piping in one compartment, and a rotary table or reel, for the soiled hose, journaled removably in the other compartment, and from which the hose may be unwound and passed through the connecting opening into the washing compartment.

No. 492,165.—Hose-Clamp. John Nase, Syracuse, N. Y., assignor to the Syracuse Specialty Manufacturing Co., same place.

The combination with the hose clamp-band, of a guard plate formed separately from said band and with tongues embracing the edges of the band.

THE TIRE INDUSTRY.

A BRITISH VIEW OF RUBBER CYCLE-TIRES.

*By R. J. Mecredy.**

OF tires there are no end—good, bad, and indifferent—but only those that have stood the test of time can be relied on. The original pneumatic tire, made by the Pneumatic Tire and Booth's Cycle Agency, Limited, and commonly known as the "Dunlop," from the name of the inventor, holds pride of place. Not only this, but the patents have been admitted by nearly all the tire-makers, and these are now paying royalty. So successful has the company proved that its £1 shares are worth £17 each. The 1893 pattern tire has been vastly improved, and is now admitted to be the best in the market. It consists of an air-tube and an outer cover backed with strong canvas. Through the edges of this canvas continuous wire rings pass. These rings are smaller in circumference than the edge of the rim, but greater than the center, and when the tire is inflated they rest midway between the two and cannot come off. To remove the outer cover for repairing purposes it is only necessary to unscrew the valve and let the air out, and then with the thumbs to push one wire into the bottom of the rim, running the fingers round until it protrudes above the rim at the opposite side, and then it can be slipped over the edge. the whole operation not taking more than ten seconds. This leaves the air-tube bare, and a puncture can be repaired in from three to five minutes. The tire is fast, comfortable, and wears well, and is far ahead of anything hitherto put on the market. I have already ridden it over two thousand miles, mostly on muddy, rough roads, and after such an experience I can recommend it as excellent in every respect.

Although the Dunlop Detachable was the first wired tire invented, others have been running for some time, and most of these are paying the Pneumatic Tire Company royalty. Scott's tire—the invention of Mr. Robert Scott, of Newcastle—is, we should say, the best of these. The rim is much shallower than the Dunlop, and has two little ears at the edges on which the wires rest, and these wires, instead of being annular, are joined with a right and left-hand screw. This enables much lighter and simpler rims to be used. It is quite as fast a tire as the Dunlop, the only point of weakness being where the wires are left exposed at the join.

Next comes the Michelin tire. It is secured to a nearly flat rim by steel rings. It is fast, simple, and reliable, but both price and weight are excessive.

The Seddon tire is another pattern. In it the wires are joined with a coupling, but this method is not nearly so simple or easy to manipulate as the Scott or Michelin.

Another group of tires may be described as the clinched variety, the cover being secured to the rim by the pressure of the air. The Clincher, made by the North British Rubber Company, was the originator of this class. It resembles the Dunlop Detachable, except that the rim is deeper and it has no wire at the edges of the cover. Instead of this, a bead of rubber is "clinched" against the turned-in edge of the rim, and is thus held in place. Both rim and tire are heavy. A much simpler tire is the Nedderman. The rim is very shallow, light, and strong, and I fancy this tire is a really good thing. The Macintosh Detachable, the Holdfast, the Gormully & Jeffery, the Rath, and the Torrilhon are on somewhat similar lines. The feature of the latter type is a self-healing air-tube, which closes automatically on being punctured. The inside is covered with very thin scales of rubber, overlapping each other, and these yield to the instrument which causes the puncture, and close over the hole when it is withdrawn. I fancy this is a really good thing, and at present I am putting a pair of tubes through an exhaustive trial.

Of closure, or self-healing tires, there are several varieties, and the Torrilhon should, perhaps, be classed under this head. It possesses this advantage over all others—it is fast. The principal closure tires are the Macintosh and the Dunlop, both relying on compressed rubber, and the Silvertown, relying on raw rubber.

The Boothroyd is the best of the single-tube varieties. It is built up of rubber, canvas, and rubber, all vulcanized together, and is cemented into a shallow rim. It is not quite so fast as the built-up varieties, and it is difficult to effect a permanent repair when it is punctured. The Fleetwood is another variety, but in case of bad puncture the layers can be peeled back so as to get at the seat of injury. There are a number of tires made which come under none of these heads, and the best of them, I fancy, are the Leyland, the Preston-Davies, the Heale, and the Courier.

The Persil flexible wheel cannot properly be described as a tire. It is a French invention, and excited much interest at the Stanley show. Its construction is as follows: There are two rims; the outer one is made of flexible sheet steel, which gives on meeting an obstruction, and adapts itself to the road surface. This rim is connected to the rim to which the spokes are secured by S-springs. These springs regulate the flexibility of the outer rim, and, being placed edgeways, make the wheel fairly rigid laterally. I have tested this wheel and found it very comfortable, but not so fast as the pneumatic. How it will wear is the question. If it wears well it will undoubtedly be in some demand.

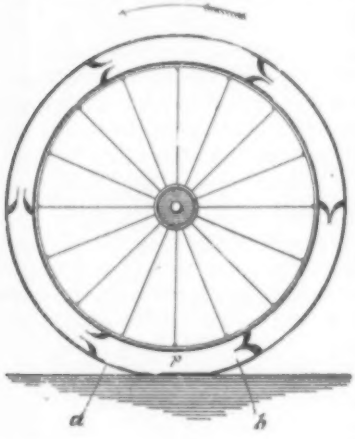
[Mr. Mecredy says further: "Hall's brake is the best. The ordinary spoon cuts the tire, and a band brake is a fraud. Be very definite in specifying what gear you want."]

* This article is extracted from a paper in the *Fortnightly Review* (London) for February, on "Cycles and Tires for 1893." Mr. Mecredy is the editor of the *Irish Cyclist* and is himself an accomplished wheelman.—THE EDITOR.

ACCELERATING ATTACHMENT FOR TIRES.

THE resilience and feeling action of the pneumatic tire accounts for its freedom from sharp vibration —that potent destroyer of high speed—at the most advantageous place and period of time—*i. e.*, the place of beginning and immediately before the vibration can reach the wheel, the frame, and the rider; and this in turn accounts for the speedy and easy riding qualities of this popular tire. The claim has been made and argued that the pneumatic is an accelerating tire because of the rebound of the confined air at the tread. This is clearly fallacious, as the reflex action is exactly equal in both the forward and the rearward direction.

Ordinarily when pressure, due to weight and rider, is upon a wheel provided with the pneumatic tire, the confined air compresses, moving equally in both directions, from the point of contact with supporting surface. The simple arrangement of rubber valves shown in the cut allows the air to move in only one direction, which is always from the forward contact with supporting surface. Does this effect a certain amount of collapsability of tire at *a*, the front side of contact, which will not exist at *b*, the rear of said contact?



To make the philosophy of it clear and assist the reasoning, so that the action will not be confounded with the mechanical principle of reaction, which one is apt to do at first glance, imagine the following conditions: Tire partially inflated; valve at *a* held closed by thumb and finger; weight is put upon wheel, then clearly the air in compartment *p* is under higher compression than any of the other compartments. Suddenly release this valve, is it not then obvious that the wheel will take on a rolling tendency in the direction indicated by the arrows?—S. D. MOTT, *in The Wheel.*

* * *

NEW TIRES AT AN ENGLISH SHOW.

SEVERAL new tires appeared at the Cycle Show held in London under the auspices of an association composed of a few of the largest manufacturers, beginning on January 20. The correspondent of *The Wheel* (New York) expresses the opinion that the management made a great mistake in placing the most interesting portion of the exhibition—namely, the tire section—in odd corners, practically out of sight.

The new "Automatic" tire exhibited by the Cycle Rubber Works, Limited (Birmingham), is mentioned as being made in different forms. The principal one is that in which a cover containing wires upon its edges is used, the opening being, contrary to all other forms of tires, at the top or tread portion. The fixing is entirely distinct from the rim, the closing of the cover being effected by merely lapping one wire and half the cover over the other wire and other half of the cover. Upon inflation the air-tube takes its place between the wires and the cover is closed. The Pope Manufacturing Co., it is stated, are in treaty for the purchase of the American rights of this patent.

Another novelty, the "Treywell" tire, about which so much stir has been made, is practically the Michelin, except that it is said to be easier to attach and detach the outer cover, the band being fastened by a lever which requires no pulling or hammering into position.

The Wheel's correspondent, mentioning the display of "blandyte" at the exhibition, thinks that from its appearance and low price, as a substitute for rubber, it should serve to reduce the price of pneumatic tires.

* * *

BICYCLE SUNDRIES.

ALL sorts of novelties in the way of repairing the rubber pneumatic are being brought forward. The Pope people have made a spool-shaped plug which is pushed into the puncture and forms a quick repair. Morgan & Wright, of Chicago, are placing upon the market a little leather pocket containing a small vial of India-rubber solution, a roll each of tire tape and rubber dam with cords and needles. All sorts of rubber cements are being compounded with high-sounding names.

—Alfred DuCros, of the Irish factory, is in Chicago in the interests of the American Dunlop Pneumatic-Tire Co. He is making arrangements for the establishment of a branch factory in that city for the manufacture of the 1893 Dunlop Detachable Tire. The principal offices and factory will be located in New York; there will also be a branch in Boston. The company have secured control of all patents which could in any way interfere with the '93 tire, and they guarantee all purchasers or users against loss through litigation. It is stated that A. Featherstone, who introduced the Dunlop tire in America, will not be connected with the business of the new company.

—The Gormully & Jeffery Manufacturing Co. (Chicago) are reported to have placed an order recently for rubber goods amounting to $150,000, to be used presumably for their pneumatic tires. It is stated that recent infringements on their pneumatic tire patents are receiving the attention of the legal department of this company.

—The idea of providing ordinary carriages with pneumatic tires has been discussed abroad, and in an article regarding it *Pearson's Weekly* says of the tire: "It has been made in such a manner that it is practically impossible to *punctuate* or bust it." They evidently think it cannot be brought to a full stop.—*The American Cyclist.*

—At a recent torchlight parade in Providence, R. I., in which numbers of bicyclists took part, some malicious individual drove tacks through sheets of cardboard and laid the cardboard on the streets, the points of the tacks being uppermost. As a result, when the cyclists rode in the procession the tacks punctured the pneumatic tires and there was a sudden let-down. Had the perpetrator of this mischief been discovered by some of the angry sufferers, he would probably have been lynched.

METHODS USED IN SELLING FIRE-HOSE.—II.

By a Fire-Hose Salesman.

IN making a sale of fire-hose the elements are involved which pertained to the old Yankee's suggestion to his boys, that "there are many more ways of skinning a cat than that of beginning at the head, but one thing absolutely necessary in the operation is that you must be in close proximity to, and in absolute possession of, the cat to be skinned."

The primitive way of locating the city for a fire-hose deal was that of the traveling salesmen. Many fire departments had not had the least idea that they were in actual poverty in their lack of hose until the salesman called attention to the fact, either that their stock was very small, or that the supply on hand was rotten and unreliable. If this could be impressed upon the minds, first of the men of the department, then of the Chief, then upon the Council, the hose would be voted for, and the contract signed, and the salesman would go away happy. Success would be particularly certain if the firemen were with him, on account of his winning way of *treating* them. The Chief would also be with him if there was a new rubber coat, if not more, in it for him. Success would be hastened particularly if each member of the Council were interviewed and made to believe that the sun revolved around his individual head.

But in case some other equally smooth salesman should get on to the "deal" while in progress, then all of the ten commandments are wiped off the slate. Often a deal begun in this quiet, orthodox way, has, before its culmination, had the whole fraternity involved, and to such an extent that the united salaries and expenses of the salesmen engaged would aggregate more than the total amount of the purchase money for the hose. But the one who obtained the order had all the honor due from the fact that "after a most exhaustive competitive examination of all the different makes, *the best was selected.*"

The signing of a contract, however, is not the ending of the deal. Any city, in the course of time and progress, will need more hose. If the same man is in charge of the public business, and if the salesman is with the same manufacturing company, another contract will be made with but little agitation, but if changes have taken place in the connections of all those interested, then a line *grounds* somewhere. In the past and at present fire-hose sales to city fire-departments have been influenced by the use of pure unadulterated "boodle," but not to the extent that has been charged by many disappointed salesmen. "Every man may have his price," as has been asserted, but not always for cash.

One of the hardest "deals" that it was ever my lot to be conversant with was perpetrated in a small city in Kansas, on the Santa Fé railroad, in the early "eighties." I instance this case because it ranks as the most bare-faced purchase of, and payment for, a contract that I remember. The city Council had ordered notices to be sent to the different dealers that proposals would be received for fire-hose, and purchase made at the next meeting of the Council. Before that time several fire-hose salesmen appeared and worked the field, *i. e.*, members of the volunteer department, members of the Council, the Mayor, etc. The result of the canvass showed that the City Clerk held the "age" and had been fixed; therefore, after each salesman had done his best with and before the Council, not much surprise was felt when the Clerk made his special report and showed from correspondence he had had with many fire-departments that only one brand of hose offered here by one of the agents would prove of any value to the city. He strongly advised, therefore, that the proposition from the agent for that brand be accepted, which was done, and the Mayor and Clerk were directed to sign a contract accordingly. The unsuccessful hose-salesmen departed from the city by the first train, except one who had a curiosity to know more about how it was done. He also wanted to mention to the City Clerk his private opinion as to the latter's honesty in his statement, made the day before, "that he had made no selection of hose, and would not recommend the purchase of any special brand."

Rising early the next day this salesman started out to the business office of the City Clerk, which was in a small detached lumber-yard office building near the railroad. As he came in view of the office the figures of the successful salesman and the City Clerk passed through the door, which was closed behind them. There was nothing wrong about that, but the query arose, "Why do they pull down the curtains on the front and side windows?" Then the agent on the outside felt a new suspicion and said to himself: "I'll bet a dollar they've locked the door." Perhaps the contract had been executed and was to be delivered and paid for C. O. D., but how? If a person could only step into that little shell of an office about five minutes! Even if that door was locked, if a man in a hurry should walk briskly up to the door, grasp the knob, and, while turning it, should stumble so that the momentum of his 180 pounds avoirdupois would strike the door and the catch of the lock should give way, there might be money in sight, passing from the salesman to the official. And that was the way it all happened. The Clerk was counting the cash handed out of the still visible pocket-book of the successful hose-salesman.

"Ah—pretty doorstep to keep, to trip a man up with," ejaculated the intruder; "well, old man, paying for your contract in cash now, eh? Afraid I'm intruding; see you later; good morning."

Of course the unsuccessful salesman had to tell his friend, a member of the fire-department and publisher of the leading newspaper of the place. Then taking the train he departed for Topeka, where the chief of the fire-department had stuck by his "anchor" for many years, and helped in many a sale outside. Finally he reached Kansas City for Sunday. While in the reading-room of

the hotel he was disturbed by the entrance of the beforementioned successful salesman, who in an agitated manner claimed his attention.

"I've been to several cities and hotels to find you," said he.

"Well, what do you want, now that you've found me?" queried the unsuccessful one.

"Up at A—— they have accused me of paying boodle to the City Clerk, and I want you to go up there and tell them you were mistaken about seeing me give him money. I'll pay your expenses."

"But I did see you."

"I know, but it's raising a scandal up there. If you'll go up and smooth it over we'll let you have half the order."

This kind offer was contemptuously declined, and then threats were indulged in until the unsuccessful agent arose in his wrath and helped the other out of the room with his boot. No doubt the City Clerk and the successful salesman had a troublesome time in explaining. Out of such cases arises life-long animosities between hosemen.

If a manufacturer of mechanical rubber goods is questioned about his desire for fire-hose trade he will treat the subject apparently with the utmost contempt, but at the same time he knows that if his factory has a reputation for making a good article *fit* for fire-department use, the reputation of the product of the factory in other lines is greatly enhanced.

In recalling methods used in selling fire-hose, those that were brought to the surface when the city of St. Paul reorganized her fire-protection service, and thereby cancelled the mortgages held on any of the retired officials, making an opening for the negotiation of new ones, are worth mentioning. A board of fire commissioners was established, presided over by that genial and honest old gentleman, H. R. Delano, whose habit of incessant interrogation of "don't cher know!"—expressed in his peculiar way—struck one as very funny. The reorganization of the department entailed an increase of machinery and the purchase thereof brought out competition from the different manufacturers. Talk about methods! That's what the presiding officer was looking for, and when he tumbled to one something was likely to happen. Some "methods" got in, however, in spite of his care, and in the purchase of engines, chemicals, trucks, ladders, fire-alarms, and fire-hose, the atmosphere was full of them.

It was at this time that one of the strangest methods was shown, and that by as good a fellow as ever lived, who, although not doubting his own uprightness in making sales, possibly felt that his competitors had tried to discredit him. The peculiar "method" he introduced was an affidavit signed by himself and duly acknowledged before a notary public, to wit: That he had never paid to any one connected with the largest fire-department in the West a dollar for commission on the sale of any of his apparatus to that city. Of course that settled it, and all malicious statements to the contrary should have had an end.

Fashion has much to do with the equipment of fire-departments, and the hose used in them has not entirely escaped from its influence. Buffalo and Detroit have a fashion of buying one make of hose. Boston buys some other. Pittsburgh buys immense quantities of 3½ inch hose for ordinary fire purposes;—the unkind criticism has been made "that there's more in it."

One of the great methods of selling fire-hose has been to try to control the organizations of firemen, little and big, but of that later on.

RUBBER IN THE ENGINE-ROOM.

IN a new book entitled "Engine-Room Chat," by Robert Grimshaw,—who has been an occasional contributor to THE INDIA RUBBER WORLD,—occur some "rubber" items, two of which are here reproduced:

CUTTING RUBBER GASKETS.—I have been much amused at seeing that Johnson fellow cut gaskets out of sheet rubber. In the first place, he doesn't know how to lay them out. He cut out the inside circle first and then did not have any center by which to strike the outer circle, which he had to make as the Irishman played the fiddle, "by main strength and stupidness." In the second place, he went on cutting with a knife which made very little impression upon the rubber, when if he had just wet the blade with potash and water, or even with ordinary every-day water such as he feeds into his boiler, he would have cut it about twice as easily. Then after he got his misshapen ring cut out, he clapped it without any further preparation between the surfaces of which he was going to make a steam-joint; and in about a week it will be very neatly cemented to both surfaces, so that when he wants to break that joint he will in truth "break" it; for that gasket will not be likely to serve again. Part of it will be on the boiler-shell and part on the man-hole plate. If he had known enough to chalk one side, or better yet to black-lead it, when he wanted to break the joint he would have found that the chalked or the black-leaded side would free itself from the iron just as though it had been greased. Now I wish him joy of it.

RUBBER BOOTS FOR ENGINE-ROOM USE.—The engineer at Shore's place has just put in a queer requisition—for a pair of rubber boots to wear in his engine- and boiler-room. The "Smart Aleck" of an architect never bothered himself about the water level, and the result is that the recent high wind has caused the river to rise a few feet and soak into the low-lying districts, with the result of putting about a foot of water into Shore's engine- and boiler-room. The engineer says that it saves him wetting down his ashes, and that he's a Baptist anyway, but he thinks that Shore ought to supply the rubber boots. Shore says that when he goes down to the architect's office it won't be rubber boots that he'll wear, but broad-gage Waukenphasts.

RUBBER BOOTS AND SHOES.

HOW I MANAGE MY RUBBER DEPARTMENT.

*By G. M. Fink, Shoe-Dealer, Salem, Ohio.**

RUBBERS, like many other articles of merchandise, have served as leaders among the retail-shoe merchants; and the prices have been cut so low that it takes close figuring to make the rubber portion of our business a success financially. One of the greatest difficulties we have to overcome is the competition in cheap rubbers. It is easy enough to obtain the cheaper grades of goods, it is easy enough to sell the cheaper grades of goods if we wish to misrepresent their quality, as many people know nothing in regard to the different makes and their relative standard of value. This obstacle makes it hard for the retailer to sell as many first quality of goods as he should. Were it not for so many different grades, we could be able to do a successful business on less capital with less difficulty, and the people would derive better satisfaction in the purchase of their rubber goods. Were the people fully educated upon the different brands and makes of rubbers, it would be a difficult task to misrepresent them to the public. But as it is, an honest dealer finds it hard work in many cases to sell such goods as give the best satisfaction. Had we but one grade of rubbers manufactured, and that grade first quality, it would be a more satisfactory way of doing business.

At least one half of the rubber goods sold in this community are second and third qualities. Therefore, the complaint we hear from our trade is not unexpected. The public have been to a great extent outrageously humbugged. The majority of people wish to purchase the best goods, but the dealers, being compelled to carry so many different qualities in order to meet competition, have been caused, in many instances, to misrepresent quality in order to effect sales, having sold out sizes on first quality. Therefore the general public have been led to believe by their past experience in the purchase of their rubbers, that all rubbers are about the same in quality. Our experience teaches us that something is wrong, and to rectify that wrong is a problem hard to solve.

In managing our rubber department, we strive to give the best goods for the least money at a fair, legitimate profit. We never have been guilty of selling a rubber shoe below cost to entice our customer to buy other kinds of goods, and charge the loss derived from such sale on other goods. We strive to keep our stock well sized at all seasons of the year. We purchase in our general line two qualities of rubbers, first and second qualities. We also buy a few ladies' cheap rubbers, which cost eighteen cents per pair and sell for twenty-five cents a pair. We never allow our competitors to undersell us, nor are we guilty of the abominable practice of cutting under. We believe that every man should be in business for the purpose of making a legitimate profit upon the goods sold. Too many merchants have made sad failures, not having realized sufficient profit to justify them upon the amount of business done. We have always bought our goods as low as our ingenuity and money could buy them. We keep our rubbers in separate apartments, properly sized, so that we can serve our customers in the shortest possible time. We never have been guilty of misrepresenting a second quality of rubber for a first quality.

We pay strict attention to the fitting of rubbers over shoes, for the best quality, improperly fitted, will not give the satisfaction expected from such goods. Under no circumstances do we warrant rubbers we sell. However, we are often compelled, through duty of man to man, to make deficiencies good, which is no small item in the rubber business. We often hear our customers remark that rubbers are not as good as they have been years previous, and our only explanation, which will substantiate our previous assertion, is, that the manufacturers to-day are turning out many more cheap goods than they did in years gone by.

I suppose the manufacturer will say: "We manufacture cheap rubbers because there is a demand for them." Our answer to that assertion will be: "Is it not the retail dealers' fault through strong competition in demanding such goods?"

We think the trouble lies to a great extent with the retailers themselves. The general public want better rubbers, and are willing to pay, in most instances, a good price for a good article, if they can rely upon the article being as represented, and find that they have had their money's worth. If the manufacturers will manufacture but one grade of rubbers, the retailers can purchase but one grade, thereby enabling the retailer to do business on less capital, and consumers to derive better results from their purchase. Whether the manufacture of one grade of goods can be accomplished is a question we hope to see agitated, either pro or con, for the welfare of all concerned.

We have managed to make our rubber department average us a fair compensation for our capital, time, and trouble. Fifteen years ago we had less cheap rubbers, people got better satisfaction, and we made more money than we do to-day from their sale. When rubber boots cost three dollars a pair we could easily get four dollars at retail. We seldom heard of any complaints in regard to their wear; and so on, with the same proportionate rate through the entire stock. To-day we pay $2.00 to $2.12½ for rubber boots and retail them for $2.50, and the same proportionate rate throughout the stock, with a great many complaints and dissatisfaction among our trade.

We hope that something may be done, through the instrumentality of the "Rubber Combination" which has been formed, to right some of the irregularities which have crept

* From the *Boot and Shoe Recorder* (Boston), February 15, 1893.

into the rubber business. We also hope a standard price will be established at a legitimate profit to the manufacturer, and that price made to all retailers and strictly enforced, so that no retailer can purchase one hundred cases for less money than one case, thereby placing all dealers upon equal footing in the distribution of rubber goods.

We see that a great many jobbers and factories are quoting net prices on rubbers, which is a great advantage to the retailer, and we hope that the custom of listing rubbers and figuring off discounts will be entirely discontinued. The practice has been a misleading one, and required a great deal of trouble and figuring in the purchase of rubber goods. The net price quoted gives the retailer much less trouble to determine the exact cost of his rubbers. And if all those who deal in rubbers will quote net price, much time and trouble will be obviated.

Now I do not know as I can say anything more of importance upon the rubber question, as rubbers, like all other kinds of merchandise, well bought are half sold. Therefore I will not confine myself strictly to the rubber question. We retailers are trying to do the best we can for ourselves individually. Would it not be better to work more in harmony with each other? Could we not sell just as many goods and derive better profits by so doing? Does not every successful business require a legitimate profit? Has ever man accumulated wealth by adhering strictly to the undersell policy? Will not his competition meet him in that undertaking? Would it not be better to place our energies and our capital trying to beautify our stores, watching our stock closely, striving to place before the public better selected stocks, larger variety, courteous treatment and civility towards our customers than to use our energies in price cutting? Would not our ledgers show a better balance at the end of the season? My experience has taught me that the public does not demand goods of the cheapest qualities, but a well selected stock at a popular price. Therefore give us rubbers at a popular price, manufactured from the best material, and we will have less difficulty, make better profits, and the public will get more for their money than under existing conditions.

It may be of some interest to the manufacturers to know that in this section of the country rubber boots have not been having as large a sale as they have been for the past few years. Wool boots and heavy overs are taking their place. We have not sold more than half as many rubber boots as we did last year, but have sold double the amount of wool boots. The advantages of wool boots over rubber boots are many. Rubber boots cause the feet to perspire, thereby making them become damp and cold. The wool boots are much warmer and do not sweat the feet, and the cost to the consumer is much less than rubber boots, as one pair of good wool boots will last two winters, with the addition of one pair of extra rubbers, while it often takes two pairs of rubber boots to wear one season.

Damaged rubbers, or figuratively speaking, punch goods, have their advantages and disadvantages. Their advantages are many.

We believe that many punched goods are better than any second or third quality goods, and can be sold at the same price as second quality and give a legitimate profit to the retailer. But the abuse to which some dealers apply them is very misleading to the public. We are well aware that the manufacturer must dispose of his damaged goods at some price. Would it not be better to place a stronger identification upon their quality than a mere punch in the back of the rubber, which in many cases requires very close inspection to detect. Unprincipled dealers too often sell those rubbers to the trade, representing them first quality, at a price that the best rubbers cost wholesale.

To overcome that difficulty with first quality of goods compels the dealer to sell at cost; could not the manufacturerer place upon such rubbers that are damaged in manufacture a more definite mark, so that the people can more fully distinguish their worth. Could not some method, for instance, a cloth label, be sewed upon the rubber, saying "this rubber is damaged in manufacture and sold to the trade at a reduced price." If something of that kind could be accomplished it would be a good thing for the trade.

THE LATE RUBBER-SHOE FAMINE.

IN an article on the weather, in the *Engineering Magazine* for March, an official of the United States Weather Bureau asserts that "the month of January last was marked in portions of the United States by the longest protracted cold season that has been recorded since accurate observations were begun by the Bureau twenty-three years ago." It was the opinion of most persons that the backbone of winter was broken with the termination of the extremely cold weather of January, but while the magazine article mentioned was going through the press, a relapse of winter occurred, the effect of which seriously inconvenienced the rubber-shoe trade.

In an article on the trade in Baltimore, the *American* states that "the awful weather this winter has driven to the rubber counter persons who have never worn rubbers before. . . . The rubber-goods market is almost destitute—swept clean of rubber shoes not only in some sizes, but generally as to grades." One dealer is reported as selling No. 12 rubbers to persons requiring much smaller sizes, the wearers being forced to tie them on.

The Patapsco Rubber Co., who recently succeeded Janney & Congdon, said that the shoe trade this year had been the largest since 1884. The unusual demand was on account of the prolonged prevalence of snow. The storm rubber had the biggest run. The shoe-manufacturers, they say, having been left with large stocks at the end of the last five winters, on account of the mildness of the weather, had shortened their production, and they were not prepared for the extra demand of this year. The firm quoted reports sales of woolen arctics this year twenty-five times larger than last year.

Boyd & Jones state that they have not been able to supply promptly their orders for boots and shoes for three months past. They report a great shortage in the supply, and say that staple goods have not stopped an hour in their store. They have had a fair business in rubber clothing, but not larger than

they have been able to take care of comfortably. They regard the season as a very successful one for the manufacturer so far as sales go, but the prices were fixed ahead and have not been changed. They predict excellent prospects for next year. No one has shoes in stock in any quantity, and the stocks of clothing are not heavy.

The Baltimore agent for the Woonsocket Rubber Co., Charles W. Linthicum, reports the largest business for his agency since it was established. Two months' trade this season, he says, were equal to eight months last year.

TREASURER GEORGE H. HOOD, of the Boston Rubber Co., said to the Boston *Journal:* "After three or four warm winters everybody has had large stocks on hand. The retailers have carried over large stocks; the manufacturers also had large stocks. Last spring the jobbers didn't put in their orders as early as usual. The manufacturers had such amounts of made goods that they didn't want to make the usual amount. Now comes this winter, unprecedentedly severe, and the demand is great. It is too great to be immediately filled. There are factories enough, but the orders are not given in time."

THE rubber-shoe "famine" has also been felt in Hartford. "We have just been taking stock," said Manager J. A. Pitkin, of the Conant Rubber Co., to a *Courant* reporter, "and I never knew it to be so low as at present. We have names on our books of firms who have never traded with us before, which shows that their usual channels are exhausted. Jobbers in Boston, Springfield, and New Haven have no supply on hand, and it will be at least six weeks before the factories can catch up with their orders."

* * *

THE NEWS HAS REACHED THE PACIFIC.

THE San Francisco newspapers have already learned that there is "in process of creation" a great rubber "trust" which has already "a local habitation and a name," with a head office in New York and "a branch headquarters at Boston also." As for its name, it is called "the United States Rubber Co." There is "millions in it," according to the San Francisco *Post*, which has been getting some information from S. M. Runyon, one of the local representatives of the Goodyear Rubber Co. It is stated by that newspaper that the Goodyear company is one of the keenest competitors for the San Francisco agency of the "trust," and upon their success in securing such agency may depend the union of the company with the big concern. According to the same authority the local representatives in San Francisco of the Woonsocket and Boston Rubber Boot and Shoe companies are making an active fight to control the Pacific-coast trade in rubber boots and shoes.

* * *

THE OMAHA TRADE IN RUBBERS.

IF there is any particular department of the retail boot and shoe trade that is being butchered up and slaughtered outright during the past few seasons throughout the larger cities, it certainly is the rubber department. It would seem that a great many merchants have conceived the idea of imposing on the much-abused rubber department by cutting the life out of prices as a means of advertising their whole stock. This is certainly a mistake, as rubber goods are seasonable, and if there is any part of a stock that should be sold at a profit, it is the stock that sells only during a few months in the year. The howl for cheap rubber goods has compelled the rubber manufacturers to cheapen their product until in many instances it has become almost impossible for a customer to obtain a good article when willing to pay the price. Not long since one of our large department stores received a car-load of rotten rubber goods, consisting of ladies', misses', and children's sandals, advertised and placed them on sale at three cents per pair as a mere advertisement. The consequences are that ever since the shoe-stores have been annoyed by frequent calls for three-cent rubbers. It is an actual fact that fathers and mothers whose general appearance would indicate that they were sane and possessed of an average amount of intelligence, have been known to enter the different shoe stores of our city in search of rubber overshoes at three cents per pair, and when they were informed that no rubbers were kept at that price seemed very much surprised and in some instances actually offended. What is this world coming to?—*Omaha Correspondence "Boots and Shoes" Weekly.*

* * *

NO LUMBERMEN'S GOODS IN THE SOUTH.

TO THE EDITOR OF THE INDIA RUBBER WORLD: In your issue of February 15, I note your reference to an interview between the St. Louis *Shoe and Leather Gazette* and the writer. I desire to correct one statement made by the *Gazette* as having been quoted by me,—that our trade in the Southern States on lumbermen's arctics is especially large. This statement is erroneous. The Southern trade know little or nothing of lumbermen's rubber shoes; and, instead of having an extensive sale on this line of rubber shoes in the South, the demand is confined entirely to colder climates. Thinking that possibly some of our worthy competitors might stretch their imaginations to a point of believing that the American Rubber Co. had discovered a southern outlet for lumbermen's goods, I have thought it wise to correct this statement before some clever salesman was censured for not having secured his portion of the trade in lumbermen's articles in the Southern States. Very respectfully,

GEORGE W. PERRY,
Agent American Rubber Co.

St. Louis, Mo., February 18, 1893.

* * *

BOOT AND SHOE FINDINGS.

TAN shoes and black rubbers are seen together sometimes, and they don't fit. The India Rubber Shoe Co. have solved this problem in their tan-colored rubbers.

—A countryman calling at a factory where druggists' sundries were manufactured asked the superintendent what he would make him a pair of rubber boots for. The superintendent, after a pause, said:

"It would cost about $200,000 to do it properly."

The farmer thought it a joke, and a poor one, but there was a deal of truth in it. Indeed the sum was put too small, for the money required to equip a plant and get it running successfully to turn out boots economically would be more than the sum named, large as it looks.

—The famine in rubber shoes still continues, with no signs of a let up, in spite of the fact that all of the mills are pushed to their utmost.

—The "Marvel" shoe, about which there is so much interest, is a rubber shoe unlined,—that is, it is made in a machine that automatically molds and vulcanizes it at the same time. One man can run several of these machines. As there are no wooden lasts in use, and as the heat in vulcanizing is direct from the plates of the molds which are hollow and steam heated, there are advantages in the saving of the wear of boots which char and shrink, in the time of cure, and in exactness of sizes which are always the same.

What Constitutes Good Vulcanized Rubber?

AN investigation has recently been conducted by Lieut. L. Vladimiroff, at the St. Petersburg Technical Institute, with a view to establishing rules or tests whereby the quality of vulcanized India-rubber may be efficiently judged. It is a notorious fact that no method of chemical analysis gives reliable results for this substance. Hence the tests applied were chiefly of a physical nature. From a lengthy series of experiments the following conclusions were deduced, namely:

I. India-rubber should not give the least sign of superficial cracking when bent to an angle of 180° after five hours of exposure in a closed air-bath to a temperature of 125° Centigrade. The test pieces should be 6 centimeters thick.

II. Rubber that does not contain more than half its weight of metallic oxides should stretch to five times its length without breaking.

III. Caoutchouc, free from all foreign matter except the sulphur used in vulcanizing it, should stretch at least seven times its length before rupture.

IV. The extension, measured immediately after rupture has taken place, should not exceed 12 per cent. of the original length of the test piece of rubber. The test piece should be from 3 to 12 millimeters long, 3 centimeters wide, and not more than 6 millimeters thick.

V. Softness may be determined by measuring the percentage of ash formed on incineration; it may form the basis for deciding between different grades of rubber for certain purposes.

VI. The vulcanized rubber should not harden under the influence of cold temperature.

These conclusions are to serve in the establishment of rules governing the introduction of vulcanized rubber in the Russian navy.—*The Electrician* (*London*).

A Big Cargo for Mr. Banigan.

THE correspondent at Pará for THE INDIA RUBBER WORLD reported last month the sailing from that port of the *Annie R. Bishop* for Providence, with a cargo of uncased rubber. Her arrival is thus announced by the Woonsocket *Call*:

"The three-masted schooner *Annie R. Bishop* arrived at Providence Thursday night, February 16, from Pará, Brazil. She had in a cargo consisting of 240 tons of crude rubber, which is invoiced at $400,000. It will be discharged at Wilkesbarre pier and is for the Woonsocket Rubber Co. The *Bishop* had a quick run from Pará, being but ten days out. Two days this week she lay in Hampton Roads. This quick return voyage was uneventful, but the outward trip is reported to have been a rough one. Captain Rulon, to whose vessel this valuable cargo was entrusted, is well known in this port as a first-class navigator. He was formerly in command of the coaling schooner *Centennial*."

Supposing tons of 1000 kilograms to be meant, the size of Mr. Banigan's importation was 528,000 pounds. The direct imports of India rubber at Providence in the official year 1889-90 amounted to 304,841 pounds, valued at $136,287. For the year 1890-91 they were 731,231 pounds, valued at $525,922. None were reported for the year 1891-92.

Rubber-Gathering on the Congo.

ACCORDING to a recent report by Mr. R. Dorsey Mohun, United States Commercial Agent at Boma in the Congo Free State, "The Société Anonyme Belge pour le Commerce du Haut Congo has engaged the services of Mr. Warren C. Unckles, an American gentleman from New York, long resident in Costa Rica (and who has had a large experience in coffee and rubber), to develop the rubber trade in this State and find good locations for coffee plantations. Mr. Unckles, who arrived here from Europe on the German mail-steamer *Lulu Bohlen* July 2, brought ten experienced Costa Rican and Nicaraguan rubber-cutters with him, and it will be the object of these men to induce the natives to cut the rubber properly and bring the milk to them in their different camps, where they will prepare it in the proper method for shipment. I think this is a most important step, as the rubber now being exported from here is of a very inferior quality, much mixed with dirt, bark from the trees, and oil from the bodies of the the natives, where it is plastered on for convenience in carrying."

The growth in the exports of rubber from the Congo Free State for the five years ending June 30, 1891, is shown in this table furnished by Mr. Mohun:

	Kilograms.	Francs.
July to December, 1886	18,069	79,503.60
January to December, 1887	30,050	116,768.80
January to December, 1888	74,294	260,029.00
January to December, 1889	104,940	367,310.00
January to December 1890	124,066	556,497.00
January to June, 1891	81,680	326,720.00
Total	433,099	1,706,828.40

These totals, expressed in English equivalents, may be stated at 952,817 pounds, and $329,417.88.

Our Rubber Goods in Mexico.

THE United States Consul at Piedras Negras, Mr. Eugene O. Fechet, in a report to his Government on "Mexican Trade and How to Secure It," says:

"Leather and rubber belting are imported almost wholly from the United States, with duties imposed when separately imported, and free when imported as a component part of machinery. Practically no rubber footwear is imported to Mexico. Rubber ponchos and mackintoshes come almost exclusively from Europe, because cheaper than in the United States. The trade in this line of rubber goods is sufficiently large to merit the attention of our rubber-manufacturers. Patterns of rubber ponchos can easily be secured. Ponchos and rubber coats for the Mexican trade should have three essential points—cheapness, light weight, and a certainty not to stick when rolled up for any time in hot weather."

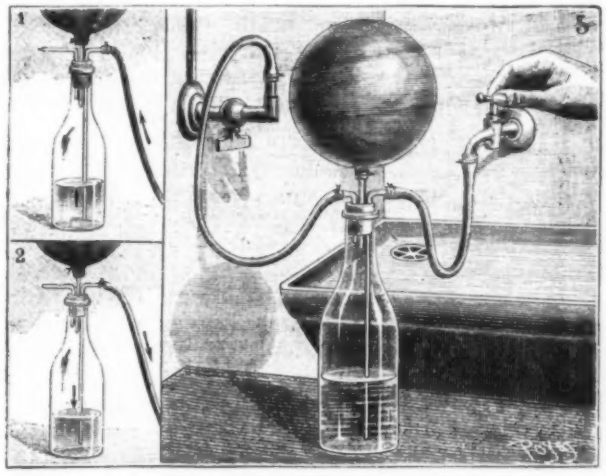
THE INFLATION OF RUBBER BALLS.

RUBBER balls, large or small, protected by an envelope of leather, gradually contract and thus lose all their elasticity, and from this moment are out of use unless one possesses the means of reinflating them. It is then necessary to carefully loosen the rubber that compresseses their tubulure, to introduce air under pressure into them, and to reclose them. The pressure that can be exerted with the lungs is far from sufficing, and, for want of a force pump, it is necessary to seek for an arrangement capable of replacing that apparatus. We shall describe here the small installation that serves us for this purpose. It is, we think, within the reach of every one, and will be able to render service to some of our young readers.

A bottle of good quality is provided with a wired cork containing three apertures, designed to receive as many glass tubes. One of the latter extends to the bottom of the bottle, the second is provisionally corked, and the third is drawn out to a point and smoothed with a lamp so as to present no sharp angle. The first is put in communication with the water conduit and to the third is firmly attached the ball to be reinflated. After this, the water from the conduit is allowed to flow into the bottle, and this forces air under pressure into the ball. Then, when the ball is judged to be sufficiently inflated, the cock is closed; but, if the entire contents of the bottle are insufficient, the cock is closed a little before the latter is full of water. A provisional ligature is applied to the ball, then the rubber is detached from the conduit, and the contents of the bottle are allowed to flow out after opening the tube No. 2.

The first operation is begun again, care being taken not to reopen the ball until a little water is allowed to enter the bottle. If there is a cock at one's disposal, it should be placed between the tube 3, and the ball, and the latter need not then be reattached before the end of the operation.

In order to introduce illuminating gas into rubber balloons, it will suffice to lead it to tube 2. The bottle being first full of water, and the balloon empty of air, one will siphon in allowing the gas to enter, then the cock of the latter will be closed, and the gas will be forced in by allowing the water to re-enter. This operation seems



METHOD OF INFLATING A RUBBER BALLOON.

[The cut kindly furnished by the "Scientific American."]

to be complicated, but in reality it takes less time to perform it than to describe it.

Figure 1, in the illustration above, shows the arrangement of the apparatus for the compression of the air. In Figure 2 the bottle is being emptied in order to give what may be called a second piston stroke. Figure 3 gives a view of the installation as a whole for inflating a balloon with illuminating gas.—*La Nature.*

INDIA-RUBBER SCRAP.

SINCE the first discovery of the utility of India-rubber as an eraser of pencil marks, the manufacture of the gum into various forms for this purpose has never varied. The first radical change from the original form—or lack of form—was the adoption of the pencil tip, which is small and very cheap. The old rubber shoe, a piece of it, or any other cast off-portion of the then few rubber articles was in use a half century ago; then came along the tablet, with serrated edges as a mark of progress, then the combining of emery as a paper cleaner; and then the placing of the piece in shells. These shells are of cedar, and encase at one end the lead and at the other the ink-eraser, the latter sometimes slitted for the purpose of taking up the dust and dirt and disposing of them at once. These shells are often beautified by designs upon them, the Scotch plaid being the favorite. Artists are well disposed towards a shell having velvet placed on the two smaller sides. All shapes are made, the trefoil, the diamond, the oblong and flat oblong being the more popular. Great care is taken in the preparation of this rubber to prevent it from becoming hard, the Joseph Dixon company working under a patent, and also making what they style a felt rubber from its peculiar surface. Erasers made in blocks or bars are sold by the pound, and have as few as eight and so many as sixty pieces in that weight. The tips for pencils are made in a variety of shapes, the hexagon head with a round corrugated device being that most frequently seen. The wedge-shape, made to fit into a slit in the end of the pencil, is also a well-known article. Rubber is also employed in devices for protecting pencil points, the gum being inserted in the nickel shield, its use being for erasing purposes. These small wares are made very cheaply, so much so that lead-pencil manufacturers add little or nothing to prices by reason of their presence.

* * *

THE composition rolls which many printers know under the name of "ruberite" are really made of glue and molasses. The composition was accidentally discovered long ago by a printer

who, not being able to find the old-fashioned pelt, tried inking the type with a piece of soft glue. It was such an excellent substitute that he mixed molasses with it to give the proper consistency. The business is now quite a large one, and numbers of concerns manufacture the composition, casting the rolls in a variety of sizes for printers.

* * *

EVERY now and then some rubber-man inquires how caoutchouc-oil is made. An old-fashioned recipe and a good one advises the use of 55 parts of caoutchouc to 450 parts of rape-seed oil, the mass to be digested by heat.

* * *

DIME MUSEUM MANAGER.—What 's that infernal racket upstairs?

Assistant.—The India-rubber man fell down and broke his leg, and he 's kicking because they 're carrying him out on a stretcher.—*Puck.*

* * *

"How many are in the social swim in Pittsburgh?"

"About four hundred; but a good many of them are wearing life-preservers."—*Pittsburgh Dispatch.*

* * *

RUBBER merchants in Venezuela are, to say the least, versatile. They buy Guajira Indian girls in the state of Zulia near Maracaibo and sell them along the coast for house-servants at $40 per head. Steps are being taken to break up this traffic.

* * *

THE Bureau of the American Republics is informed of the organization of the Central American Commercial Co., to trade between Nicaragua, Costa Rica and the United States. The company already hold and are negotiating for important cocoanut groves, rubber, tuno, mahogany, other concessions, and take agencies for all lines of manufactures and products. The company have been incorporated under the laws of New Jersey with Robert Walker vice-president and general manager. Mr. Walker has located already at Greytown, Nicaragua.

* * *

RUBBER was wrongfully used when a Brooklyn justice committed a man to jail for six months, and used a rubber stamp in signing the commitment. The man escaped through this irregularity.

* * *

MANY of the large insulated-wire companies cover their wire substantially as follows: The wire, after being tinned, is wound on a light drum three or four feet in diameter, situated behind the covering-machine. This consists of a cylinder into which the strained compound is fed, forced along by a screw until it reaches a smaller cylinder placed at right angles. The wire enters this smaller cylinder through a small hole, leaving it at the opposite side through a circular die, which regulates the application of the insulating compound which gathers on the wire as it passes along. The coated wire then passes into a vulcanizing pan. This latter is shaped trough-like, and will hold several miles of wire, and is readily revolved during the process. The requirement of skill in the workman is, in one respect, in touching the wire in guiding it as lightly and as seldom as possible. The wire is well powdered with soapstone, and the turns are deftly kept apart. The pan, after being filled, is placed in the vulcanizing chamber, after which the operation is complete for the next step of braiding, or any other disposition that is to be made of it.

* * *

THE use of rubber will greatly facilitate writing on bright tin. By taking an ordinary eraser and rubbing it over the tin, a surface is prepared which allows of the ready use of a pen or brush.

MASTERS of steamers skirting the Honduras and Mosquito coasts say that the rubber season now in progress bids fair to be a good one. The constant depletion of the forests is beginning to be quite noticeable, masters of *pit pans* saying that they have to penetrate farther into the interior every year to get supplies of rubber. On the Honduras coast attempts are now being made to cultivate rubber, with a good show of success. There seems to be a sufficiency of labor this season in the forests, both among the Caribs on the Honduras coast, and the Indians on the Mosquito coast.

* * *

WHILE it is quite the fad to seek after old things, the wearers of rubber clothing would hardly like to return to the old-style garments. As one looks about him on the streets,—and he need not choose a rainy day for observation,—he can see mackintoshes on both ladies and gentlemen, that are strictly tailor-made. I often wonder what my lady would say were she obliged to wear those of early date, those black ungainly fitting garments that even fifteen years ago were considered a luxury. Indeed they were at that time a great luxury, for fifteen years ago the making of ladies' waterproofs was hardly known outside of England, and an imported garment was not aspired to except by people of wealth. At that time all that was thought necessary in the way of measurement was the length, but to-day dealers are furnished with cards by the manufacturer giving minute directions how to take the measure, with the same precision that a tailor would take. This is for a custom-made garment, and for those that are willing to pay for it. To cut this garment requires a man well versed in the art of cutting and one who can draft patterns. How often do we see in looking at the daily advertisements: "Wanted, a first-class cutter on mackintosh clothing,—one who can cut to measure." And even the buyers of ready-made garments may expect at least garments to fit as well as other ready-made clothing. Why should they not? These garments are largely taking the place of overcoats and wraps. The question of cloth is also to be considered, for the black waterproof is a thing of the past. We have modern materials of fashionable color, fashioned so exactly like stylish coats and wraps that it is really necessary to have but one street garment of cloth and that a mackintosh.

AN UNFORTUNATE CATCH.

SURPRISED FISHERMAN—"I'll be kicked if that ain't the biggest eel I ever see!"

FROM "JUDGE."

* * *

IT is estimated that the annual production of India-rubber toy balls in different countries, in dozens, is: Germany, 2,850,000; France, 800,000; Russia, 750,000; England, 630,000; Austria, 520,000; America, 500,000; Italy, 450,000;—a total say of 6,500,000. The demand on the German manufacturers is increasing yearly. Germany alone exports to England about 850,000, and to America about 900,000 dozen, keeping for home trade about 550,000 dozen, and sending the balance to Holland, France, Spain, Portugal, Norway, Sweden and the Australian colonies.

NEW GOODS AND SPECIALTIES.

A RUBBER heel is a good thing to keep one from slipping, while its surface remains rough and when the ice is hard and dry, but let it once get smooth and the ice be covered with a thin film of water, and it is a delusion and a snare. The unfortunate who puts his trust in it is pretty sure of a fall. As a matter of fact, something that will penetrate the smooth surface of the ice or well-trodden snow is needed to insure safety. There have been in the past various devices for "creeping" on the ice, but as a rule they have been awkward to apply and unsightly and cumbersome when applied. Figure 1 shows a neat contrivance known as the Arctic Ice-Dog, which has none of those objectionable features. A narrow strap over the toe and another over the heel hold it firmly to the shoe. The creeper itself is a shield-shaped piece of metal with light short spurs projecting from it making it impossible to slip. Of course they are not just the thing to wear upon a waxed floor or over fine carpets, and all one has to do to avoid it is to slip the heel strap off, and the foot is released from them sooner even than one can take off a pair of rubbers. They can be worn over rubbers or arctics, as shown in Figure 2. Manufactured by George A. Waller, Seneca Falls, N. Y.

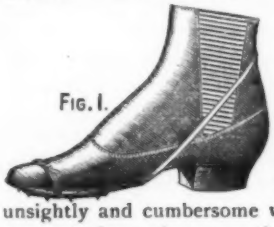


FIG. 1.

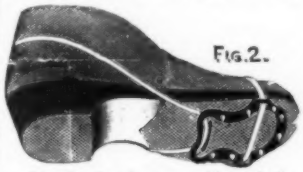


FIG. 2.

DAY'S "IRONCLAD" RUBBER BOOT.

A RUBBER boot that is "perfect and durable" is one that should have a large sale. Such is the claim for the "Ironclad," and the increasing sale that it has looks as if there were good reason for the claim. It is a fusion-lined boot made on canvas woven from the best long staple cotton, giving it great strength, while the rubber compound is the best that can be obtained. In addition to this the boot is very carefully made, and is designed to stand the hardest usage. They are made in heavy short and hip, light short and sporting, and are in demand among lumbermen, fishermen, quarrymen, miners, firemen, sportsmen, liverymen, and farmers, besides suiting a large general trade. The boot is also made with leather soles for mining and other severe uses. A guarantee accompanies each pair which reads as follows: "Day's 'Ironclad' boots are hereby guaranteed not to break or crack with fair usage, to be made of pure rubber, to be free from defect either in material or manufacture, and to be durable and reliable. Should some fail by reason of defective material or manufacture, we hereby agree to replace same free of charge." Manufactured by the Day Rubber Co., St. Louis, Mo.

A FLEXIBLE SHOE-LACING.

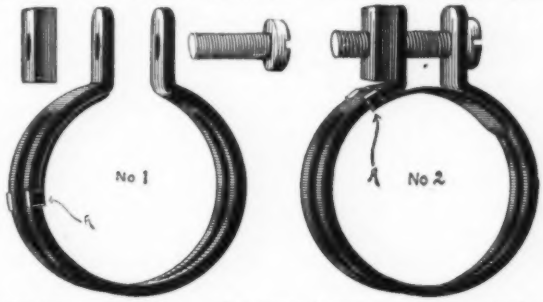
WHETHER or not there be need of hurry, the average American dislikes to stop to tie and untie his shoes. It ought therefore to be a source of comfort to him to know that inventive genius has produced a lacing that while it keeps the shoe well in shape when on the foot yet allows of its being removed without the untying of a knot. The illustration shows the method and that will need no further description. There are, however, other advantages that should not be passed over without a word. The lacing, while it holds the shoe tight to the foot gives with every movement and thus permits free movement and free circulation of the blood. No danger of the foot "going to sleep" when this is used. The lacings are made in both black and russet, and in all lengths. They are very durable and are taking well with the trade. Retail price ten cents a pair. Manufactured by the Eagle Specialty Co., Brockton, Mass.

MACKINTOSH LEGGINGS.

TO-DAY, when hats, coats, and trousers are "mackintoshed," it is fitting that footwear should come in for its share of such attention; hence, the appropriation of the mackintosh legging. That the legging has come to stay none will dispute. Especially is this so with the ladies' leggings, and this winter, with its deep snow and prevailing slush, has done a deal to help the sale of these accessions to health and comfort. The legging shown in the illustration is designed for ladies' wear, and may be made from almost any pattern of cloth desired, and either double or single texture. It is light, warm, and absolutely water-proof. A pair of these coming down over a pair of "storm slippers" equip one almost as well as if they were rubber boots, and the fit is better and the appearance neater. These goods are also made for gentlemen and children, in various styles to suit a variety of tastes. Manufactured by S. W. Hall, No. 155 State street, Chicago.

THE "STAR" HOSE-BAND.

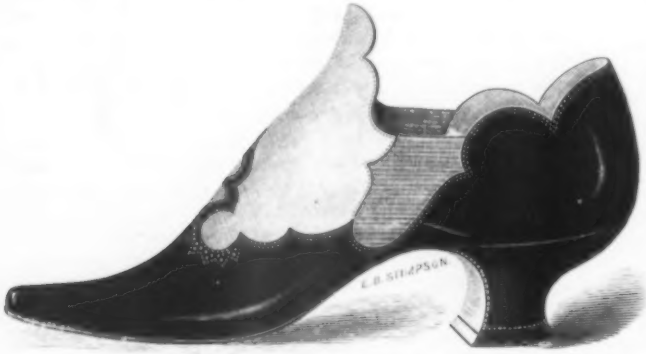
A NEW hose-band, patented as late as February 21, 1893, is the one shown in the accompanying illustrations. It is made of a fine grade of rolled strip steel, which is plain or copper-plated as the user may prefer. This steel is guaranteed to stand any pressure that can be brought to bear upon it in actual service, and, as has been shown, the screws will break before the bands



will part. The special advantage in the band is the adjustable piece marked *A*. As this piece slides out of position while the band is being placed upon the hose, it is not necessary to spread the band enough to destroy its form. Figure 1 shows the piece in the position indicated. When, however, the band is in the hose, the tongue may be slipped up into the position shown in Figure 2. Its office there is to keep the hose from being punched as the band is tightened up, as the ends of the band draw evenly from both sides and there are no strap ends left to cut the hose cam or to imbed themselves in it. Nor is there any strain on the tongue-piece. The bands may be easily adjusted with a screw-driver, no wrench being required. Manufactured by the Syracuse Specialty Manufacturing Co., Syracuse, N. Y.

THE "ANNETTA" SHOE.

THE illustration herewith represents the "Annetta" shoe, designed by E. B. Stimpson, of New York, for the Bridgeport Elastic Web Co. Said the live company for which this beautiful shoe was designed: "No better proof of the value of advertising a meritorious article could be needed than the actual results we are obtaining by placing this conspicuously before the trade." Although the design is absolutely original and of American origin, it reminds one of those perfect creations called elastic slippers, that the best French manufacturers have so successfully introduced. The "Annetta" is of course designed wholly to show what can be done in elastic-side shoes towards a greater perfection in shape, style and comfort, and incidentally to gracefully introduce the Bridgeport gore. It certainly shows that the manufacturers of this gore have confidence in it themselves when they put it so conspicuously before a critical public.



THE "ANNETTA" SHOE.

And from what we can learn their confidence is justified. A careful study of the goring question through a series of years has led them not alone to adopt the best rubber thread that can be manufactured, nor the best of materials with which it is interwoven, but also to spare no effort to have their processes of manufacture such that their goods have the added advantage of being manufactured by the simplest, safest, and most effective processes. So careful is their inspection of finished goods that an inch of defective goring cannot leave the work. The result of this care has been the building up of a vast business and the friendship of thousands of shoe-retailers who know whose goods they can honestly recommend. The "Annetta" is but one of several designs that are being prepared for the shoe trade in each of which, as the design is copyrighted, will appear only the Bridgeport gore. Manufactured by the Bridgeport Elastic Web Co., Bridgeport, Conn.

A NEW FURNITURE-BEATER.

FURNITURE-BEATERS of various kinds are to be found in the notion stores, but all have a serious fault,—they are apt if used at all vigorously to mar the woodwork. A beater that can be used where the finest of woodwork is combined with the best of upholstery is shown below. It is simply a round piece of rattan,

A NEW FURNITURE-BEATER.

the ends bent until they touch, where they are fastened to form a handle. The elliptical part of the beater is cushioned with white rubber simply by having rubber tubing slipped over the ends. The beater has already been accepted by the trade as the best article in the line yet produced. For use in hotels, for dusting car-cushions, in the show-rooms of furniture-houses, and indeed in the thousand-and-one places where dust is to be driven out by a smart blow, and where careless hands might scratch or mar the varnish of wood or metal settings, there is a crying need for just this simple invention. They have also been found just the thing for removing dust and moths from portieres, draperies, dresses, and all clothing, without injury to the finest fabric. Manufactured by Prescott Brothers, Cornhill street, Boston.

RUBBER REPAIRS ON BICYCLES.

THE repairing of the rubber parts of bicycles has not reached a high stage of development. When it is remembered that the pneumatic tire is practically only a few months old, and that in the majority of the bicycle-stores the repairing of that is not attempted except in a very crude way, it can readily be seen that but little can have been effected. The handles and the pedals cost comparatively little, and when one is damaged, it is replaced at once. Such damages are very infrequent, however. Cushion and solid tires are seldom seriously damaged and when they wear out are replaced. It was with the advent of the pneumatic tire that interest began to be taken in rubber repairs, and certain of the employés began to make themselves useful in that direction. Punctures would occur, and how to repair them became a serious question. Naturally it was thought at first that a simple plug was all that was required, but this proved fallacious, and it was found that to be permanent the connection between the parts had to be vulcanized, or the inflated air would permeate any channel that it could find between the duck and the rubber, and in course of time find another outlet and generally an irreparable one. The most serious damage which now happens to the tire, apart from actual puncture, is when the rubber separates in any spot from the duck. This imparts to the tire a "blown" appearance in the particular locality, and if the defect be of any size, say that of a silver quarter of a dollar, the tire is abandoned as beyond repair. If the puff should appear on the inside of any size whatever, it is irreparable, the only means of repair being by a soft plug which cannot be reached from the inside. Bicycle-men are doing all they can to render the repair of punctures practical by riders, and at present some sell a little kit of tools which contain every facility for applying the plug heated to the spot in question.

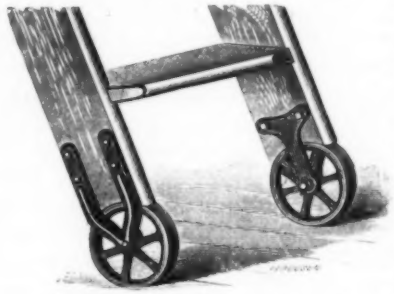
A NEW PNEUMATIC BRAKE.

THE firm of Starley Brothers have been showing a new brake on one of their "safeties" at Holborn viaduct, London. It is applied to the front wheel by the usual lever and plunger-rod,

but instead of a spoon a rubber-clothed roller, oval in longitudinal section, is carried in a light fork, and is fitted to the front of the rod. The ends of the spindle on which the roller rotates are carried by arms or links projecting from the sides of the fork crown. There should be no risk, even to the most delicate pneumatic tires, when using it.

A RUBBER-WHEELED STORE-LADDER

THE latest of the many applications of rubber tires to wheels is in what is known as the "Noiseless" Store-Ladder. The many readers of THE INDIA RUBBER WORLD in the hardware trade and in the rubber stores should have a live interest in this invention, as store-ladders are more and more becoming both fashionable and necessary. The "Noiseless," as its name implies, is simply a sliding ladder, mounted on two rubber-tired wheels, and sliding on a flat steel rail, set on edge and fastened to the ceiling by brackets. The sliding hanger or car is boxed with hardwood boiled in tallow, thereby preventing friction and insuring a noiseless movement. These ladders are neatly and substantially made of selected yellow pine, mounted on two five-inch vulcanized rubber-tired wheels. The track consists of 1¼" by 1¼" spring steel, set on edge and



fastened to neat and strong brackets, giving the outfit a very neat appearance. The smaller illustration shows the lower end of the ladder and the manner in which the rubber-tired wheels are set. In the larger illustration is shown the ladder complete and in position for use. By a simple swivel device the ladder may be made to turn corners, and indeed adapt itself to any shape of store, or arrangement of shelves. Manufactured by M. Croissant, No. 204 Washington avenue, Albany, N. Y.

TILLINGHAST REPAIR OUTFIT.

THE Tillinghast pneumatic tire, described in the issue of this paper for February 15, is accompanied by a repair outfit consisting of a collapsable tube of pure rubber cement, a pointed nozzle to screw on the same, a tapered wire bent in the form of a screw-eye for enlarging small punctures, a tire tape, six puncture-repairing patches, and a tool for inserting the same. If the puncture of a pneumatic tire is made by pin or tack, it would be necessary to enlarge the opening slightly by forcing the taper wire through the tire, care being taken to follow the course of the original puncture; the nozzle can then be readily inserted. The machine is then laid in such a position that the cement tube when inserted in the puncture will be nearly vertical, and the lowest point in the air-tube will be the place where the nozzle enters the same. A slight pressure on the outer end of the cement tube will force the cement into the tire, a half-thimbleful being sufficient to cover the opening on the inside. The nozzle should then be partially withdrawn and more cement injected to thoroughly fill the opening and leave a small amount outside. If the machine is allowed to lie in its inverted position over night the cement will have time to settle and harden over and between the walls of the puncture, firmly uniting them and forming a coating of pure rubber on the inside through which no air can escape. If on the road when the puncture occurs, the tire may be bound with tape to be treated at the end of the journey as above described. If the puncture be ragged or larger than those made by pins or tacks, two small slits are made with a penknife at the point of puncture, in the shape of a cross. These cuts are not to be more than ¼ inch in length. The tire is pressed on either side of the cuts and the opening filled with cement, but no cement is injected into the tire at this time. The object of filling the outer opening of the cuts is simply to lubricate them and to allow the patch to be pushed through easily. The stem of the patch is threaded into the hollow needle and each side of the patch moistened with water in order to prevent the cement from sticking while the same is being inserted. The tire is again pressed on either side of the cuts, and the point of the patch entered and forced through quickly into the tire until the ring on the end of the needle touches the outside. When the needle is withdrawn the patch is in position. Next, by inserting the brass nozzle on the cement tube, the patch is pushed back ⅛ inch to allow the cement to flow around the stem. By a sligh pressure on the tube a few drops of cement are forced into the tire to moisten or coat the unvulcanized washer. The stem is then held firmly until the patch is brought down to its seat, the cement is allowed ten minutes to set, and then the tire is pressed, at the point repaired, against the opposite wall, to force the patch into close contact. A small piece of tape is wound over the puncture to keep out the dirt until the wheel is put away for the day. It is then removed, the protruding stem cut off, and the outer walls of the cut cemented. These repair outfits are put up in boxes one inch square and five inches long, and can be carried in the ordinary bicycle tool-bag. The retail price is $1.50. Manufactured by the Tillinghast Pneumatic Tire Co., No. 59 Clifford street, Providence, R. I.

A NEW form of waterproofing is suggested in the employment of aluminum acetate as a base with the cloth immersed in a soap-bath.

Were They Talking About Rubber Clothing?

TWO men were standing in the rotunda of a great New York hotel talking earnestly.

"I tell you," said one, "that I must have the goods. I am losing money every day because I can't fill orders."

"Serves you right," was the calm reply. "Only a few months ago I went to you with my samples, and you would hardly look at them, much less give an order. You laughed at my statement that general stocks were low and that you would get caught."

"They always preach that every summer," was the dissatisfied rejoinder.

"I know they do," said the drummer, "and while I know of your getting caught in this same way three times I have never known you to be instructed. I suppose you and all the rest of the buyers will do the same next year as you have this year. It will be put off, and put off, until all of us are rushed to death, and then you will come in and beg that your orders take precedence over your longer-headed neighbors."

"Well, what can I do now?" interrupted the buyer.

"I'll tell you exactly, my friend," replied the angel of commerce. "Give me a good order for delivery next fall, now, styles to be settled upon at a later date, the amount to be equal to your sales for this year, and as I have a pull with our superintendent I think I can work your present order out in a week's time."

"Done," said the other. "Wire your superintendent and I will write out an agreement, and if I know myself this is the last time that I get caught without any goods."

Peru's Bid for Steamships.

MAJOR KERBEY, who has furnished the readers of THE INDIA RUBBER WORLD with some account of his voyage up the Amazon to its sources among unlimited rubber forests, found in Peru a disposition to court a closer communication with the rest of the world. One indication of this is shown in the offer by the Government of subsidies to steam-navigation companies who will undertake to place lines on the upper Amazon, which, together with its tributaries, is navigable all the way up to Peru. A former act of the Peruvian Congress provided that—

"The Department of Loretto may expend the sum of 8000 soles annually in subvention to any company who may establish steamers on the upper Amazon, to make voyages at least every two months to Yuriuaguas, to carry free the mails and two Government officers from the Javary (or boundary of Brazil) to the port of Yuriuaguas, to establish a tariff of regular rates," etc.

The law of November 14, 1890, provides:

"ARTICLE 1.—The Department of Loretto will expend the sum of 12,000 soles annually on a subvention to any line of steamers that will make from three to six voyages direct between New York, Liverpool, and Iquitos, calling at Havre, Lisbon, Pará, and Manáos.

"ARTICLE 2.—For each voyage will be paid the sum of 2000 soles.

"ARTICLE 3.- The contract will be made and executed by the Prefect of the Department, with the supervision of the merchants of Iquitos and representatives of the steamship company."

It is the opinion of our correspondent that much more liberal terms could be obtained by any transportation company which should enter the field with indications of stability and capacity for doing a large business.

Suits for Infringement.

THE Atlas Rubber Co., New York, are the owners of a patent issued in 1877 for a clamp, or stop-cock for rubber tubing. It consists of a pivoted cam and spring jaws, made of spring sheet metal. This piece of sheet metal, after it has been stamped into shape, is bent double so as to form two jaws, which extend along a suitable distance over the surface of the tube. The lower one of these jaws is made of box shape, or concave so as to conform to the shape of the tube, and is rigid, while the upper jaw may be elastic, and has its end bent, so as to press the tube tightly down upon the lower jaw. This prevents at will the water from flowing through the tubes leading from fountain syringes. Lately the market has been flooded with devices infringing upon this patent, and nearly every jobber has been imposed upon, and has been unconsciously rendering himself liable for damages to the Atlas Rubber Co. Naturally that company desire to protect their rights and have instituted sharp proceedings with a view chiefly of getting at the fountain head of the trouble. The various jobbers and dealers have responded pleasantly, and the probability is now that the chief parties at fault will be energetically prosecuted. The patent is No. 191,356, and was granted to Morris Mattson on May 29, 1877.

* * *

THE Hammond Buckle Co. (Rockville, Conn.) have filed a bill of complaint in the United States court against the Weld Manufacturing Co. of Boston, and William E. Hatheway of Bridgeport, alleging infringement of patents on buckles owned by the Hammond Company. A number of buckle-patent suits have been brought in the United States court by the Hammond company, to protect their patents on buckles used in the manufacture of arctic overshoes, and the Hammond people have won all their cases. They allege that the Weld company have been making buckles infringing a new patent, but they have not been able to get at them in law. The present complaint is based on the alleged fact that William E. Hatheway is a director and the superintendent of the Weld company, and is manufacturing buckles in Bridgeport for the Weld company which infringe the Hammond patents.

A Failure on the Pacific Coast.

THE firm of James W. Girvin & Co., dealers in leather belting, rubber goods, and fire-department supplies, at No. 6 California street, San Francisco, filed a petition in insolvency on February 17. The schedule shows liabilities aggregating $123,803.33 and assets amounting to $75,500, of which a certain portion has been assigned to Viola I. Gir-

vin to, secure payment to her of $26,315.91. This is one of the largest failures that has been reported from the Pacific coast for a considerable time, and the San Francisco newspapers intimate that there are complications involved that will keep the case in court for years to come. It is stated that the Eastern creditors will make a great effort to prove that there was collusion between Girvin and his wife, and that the head of the firm, finding himself on the eve of financial disaster, transferred most of the property to Mrs. Girvin to keep it in the family. The attorneys of the lady claim, however, that she put most of the money into the firm and was justly entitled to protection. At any rate, the crisis was precipitated when Mrs. Girvin filed in Alameda county a declaration of her separate property, which included the book-accounts of her husband's firm. This action led the First National Bank of San Francisco to levy an attachment upon the stock of the firm to secure the payment of $22,000 alleged to be due on demand loans. The firm consists of Mr. Girvin and his father-in-law, R. J. Wheeler, who resides at Stillwater, Michigan. They have been in business for several years, and until recently their affairs were regarded at the commercial agencies as having a sound basis.

The assets of the firm are reported to include stock in the San Francisco store valued at $15,000; stock in Portland store, $15,000; book-accounts, $40,000; a half interest in the Oakland Rubber Co., valued at $3500, and lands in California and Oregon. Among the creditors of the concern, in addition to the banks, are the following.

SAN FRANCISCO.	
Boston Rubber Shoe Co.	$744.57
Boston Woven Hose Co	20.36
Bowers Rubber Co.	329.80
Goodyear Rubber Co.	61.24
Revere Rubber Co.	97 79
BOSTON.	
Boston Belting Co.	$34,167.85
American Rubber Co.	20,696,28
Stoughton Rubber Co.	606.25
Boston Rubber Co.	1,500.00
NEW YORK.	
Hodgman Rubber Co.	$159.76
Goodyear India Rubber Co.	332.16
OTHER POINTS.	
E. B. Preston & Co., Chicago.	$40.00
Tyer Rubber Co., Andover, Mass.	30.40
New Jersey Car Spring and Rubber Co.	728.17

The petition in insolvency is signed only by Mr. Girvin, and the court has ordered that R. J. Wheeler show cause why he should not sign it also.

Not "Green-Goods" Rubber Stamps.

"THIS is not a green-goods emporium," was the strange sign that a New York *Commercial Advertiser* reporter saw hanging in the office of a rubber-stamp manufactory in Broadway. When one of the proprietors was asked the meaning of the sign, he laughed, twitched the placard around, and on the other side was only a "Please-shut-the-door" sign. The gentleman said that a boy had lettered the other sign as a joke, and he had forgotten it was in sight.

The origin of the sign was in two strange incidents. A very well dressed woman, tall, and with a Swedish appearance and accent, called one day and said, "I wish one of those stamps."

"What stamps?" she was asked.

"Why, one of those stamps that you make money with," she replied.

"Pardon me, I do not yet understand you," said the manufacturer.

"Why," she said impatiently, "one of those stamps that you make money with—United States money."

The rubber-stamp man courteously but firmly assured her that they made no stamps for any such purpose. Before he could say more she vanished.

This occurrence was a puzzler. During the discussion of it one of the firm suddenly remembered a letter that had been received from a cross-roads post-office in Ohio. It was to the effect that if their stamp-machine could make money equal to what they claimed, they could send one to the writer, C. O. D., by express. The tenor of the letter convinced them that the writer did not want rubber stamps or to engage in manufacturing them.

After awhile the other partner recollected an advertisement that had been carried by a list of papers having a rural circulation. It was headed in full-faced black capital letters: "How to make rubber stamps and money."

Beside the reading matter of the advertisement was a cut of a machine made for the use of rubber-stamp makers. The partners have reached a conclusion that in some way readers of this particular advertisement have read between its lines or conceived its intent to be that it offers a literal process of manufacturing counterfeit coin or paper currency.

The Insurance of Rubber Factories.

THE Rubber Manufacturers' Mutual Insurance Co., of Boston, commenced business on February 15, 1885. The secretary of the company has supplied THE INDIA RUBBER WORLD with a financial statement covering its business for the year 1892, of which an abstract is given below:

Amount at risk	$15,193,043.00
Gain in 1892	3.315,555.00
Premiums and interest received	157.449.07
Assets.	
Bonds, endorsed notes, and cash	$181,270.67
Liabilities.	
Losses adjusted not due	$16,309.77
Net cash	$164,960.90
Obligation Premiums	761,475.50
Total security of the company	$926,436.40
Paid losses during the year	$31,634.24
Dividends paid	76,509.60
Average dividend for 1892	65 per cent.

The officers of the compay are E. S. Converse, president; B. F. Taft, vice-president, secretary, and treasurer; and Benjamin Taft, assistant secretary and treasurer. The directors, in addition to these, are Henry C. Morse, Wheeler Cable, O. H. Sampson, E. B. Paige, and James Bennett Forsyth, of Boston; George F. Hodgman, of New York; Joseph Banigan, of Providence, R. I.; George H. Hood, Chelsea, Mass.; Henry L. Hotchkiss, New Haven, Conn.; Robert Batchelor, North Brookfield, Mass.; Marcus Beebe, Malden, Mass.; and Benjamin F. Peach, Jr., Lynn, Mass.

ONE of the handsomest trade publications that has reached the office of THE INDIA RUBBER WORLD for many months is a delicately tinted book, entitled on the front cover, "Here It Is," in connection with an illustration of an India-rubber leaf. On each page is an illustration showing some of the applications of India-rubber to domestic comfort or convenience. There are articles of clothing, toilet-appliances, sporting-goods, lawn-hose, toys, sportsmen's goods, and other items with which the trade is familiar, together with views of the exterior and interior of the Hodgman stores in New York. Such a neat publication cannot fail to attract favorable attention to the goods of this firm.

Rubber on the Elevated Railroads.

DURING the recent cold snap the consumption of air-brake and steam-hose on the railways was very large. A system of renewals on the Elevated roads in New York is well-nigh perfect and yet the delays were at times very perplexing. The cold weather causes a contraction of the rubber on the outside, which makes it very susceptible to pressure from the inside especially in the weaker places, and the brake becomes inoperative. Men who for some reason are styled "galvanizers" are stationed at the end of the route prepared to insert a new length in place of one that proves defective, notices of such being forwarded by telegraph from Fourteenth and Fifty-ninth streets. This force proved hardly sufficient last month, and extra galvanizers were stationed at Fifty-ninth street, with a good supply of lengths for repairs. What was true of the Elevated was also in a minor sense of every railway in the north, a fact very apparent to prominent hose manufacturers.

New Routes to Rubber Fields.

CONSIDERABLE interest is taken at present in London looking towards the development of Venezuela and Guiana. A company was organized there on December 15 with a capital of $4,000,000 to build railroads and telegraph lines in the former country, and the discussion of the resources of British Guiana has been the subject of interesting discussions at public meetings. These countries are very large in area, and although Balata is exported to some extent, and rubber trees are known to exist in large quantities, the trade is little or nothing, chiefly on account of a present inaccessibility to the interior.

Progress is also reported in the matter of the construction of the Assam-Bengal railway in India, which cannot fail to top extensive rubber districts, and add to the world's supply. The exports of Assam rubber, which mechanical-goods manufacturers like to use are at present, are by no means what they might be.

Sullivan Prefers the Rubber Bag.

IN the autobiography of John L. Sullivan recently published, the "big fellow" heartily endorses the use of the rubber bag and takes pains to describe his use of it as follows:

"I usually, in fact always, if possible, rig and punch the bag to suit myself. To build I want a good firm ceiling, strong and heavy enough so as to give the bag a good rebounding force, and hang the bag so it will come on a level with my eyes, the ceiling to be from 4 to 4½ feet higher than the bag. Formerly a large heavy sand-bag was used, but I do not approve of that as much as I do the common foot-ball, or the Rugby ball. The heavy bag is all right to show how hard a man can hit, but I can hit hard enough without using any heavy bag to show it and I can use the little foot-ball, so as to give me plenty of practice for quickness; punching the bag as I do keeps me thoroughly active from the time I start. My first move in punching the bag is with my left hand; I punch it so that it hits the ceiling, rebounding towards me, and keep meeting it with my left and right hands alternately, walking around the floor and round the bag something after the way a cooper walks around, a barrel. A man to punch the bag properly should not stand in any one spot by any means; I punch it so as to keep it going in all directions. I meet it and chase it the same as I would an opponent in the ring. The idea in keeping it thoroughly on the rebound is to give me plenty of practice and keep me moving as fast as I possibly can. One of the best ways to punch it is with the left hand, say fifteen or twenty times in succession, then either swinging the right hand or meeting it with a right hand shoulder blow and catching it with the left on its return. Some men punch the bag very awkwardly, and while they are capable of dealing a very heavy blow, I have seen some miss it seven times out of ten. The most essential part in my opinion is to punch it so as to keep it moving in a circle. This brings into play not only the arms and wind but also the legs."

He Knew Too Much.

A STORY is told of a meek-looking stranger, with a distinctly ministerial air, who applied for permission to look over a large rubber-factory. He affirmed that he knew nothing at all about the rubber business, and after a little hesitation he was admitted. The superintendent showed him around in person and the man's questions and comments apparently came from the densest ignorance of rubber. Finally, when they reached the grinding-room, he seemed to linger and asked in a hesitating way:

"Could I not have a specimen of that curious stuff to add to my cabinet?"

"Certainly," replied the superintendent blandly, although it was a compound that as a secret was worth thousands; "certainly, cut off as much as you wish."

With eager step the visitor approached the roll of gum, took out his knife, *wet* the blade in his mouth and ——

"Stop right where you are," said the superintendent, laying violent hands upon the stranger; "you are a fraud and a thief. You didn't learn that a dry knife won't cut rubber in a pulpit. Out you go, and without a bit of that compound. See?"

Fire-Hose for the Navy-Yards.

IN the United States Navy-Yards there is now demanded almost exclusively, fire-hose that has been carbolized. The specifications generally relate to Elasticity, Elongation, and Expansion. The hose must stretch 35 per cent., and a fifty-foot length should coil within a space of twenty-six inches. The carbolization consists in the impregnation of the duck with carbolic acid, which renders it mildew and rot-proof. To show the effect of moisture on duck a piece of cotton duck was buried in a damp muddy soil for six weeks. One-half of the duck had been treated with carbolic acid, and the other had not. At the end of that time the duck was examined, with the result that the carbolized portion was entirely sound, while the other had rotted away. This treatment of fire-hose obviates the necessity of great care in drying hose after use, as required in ordinary sorts. Expensive towers are not used with it, and the need of a double quantity, one part for use while the other is being cared for, is not necessary. The originators of the process are the Gutta-Percha and Rubber Manufacturing Co. (New York), and with them now its manufacture is one of great care so as to always fill the onerous requirements of the Navy Department as well as others who are accustomed to the high standard of the article.

IN a lengthy article on the resources of Mexico, published recently in a New York newspaper at a cost to the Mexican Federal treasury of $12,000, one of the inducements held out to immigrants is the possibility of profits in the cultivation of rubber. In the publication mentioned is copied entire the account which Minister Romero furnished THE INDIA RUBBER WORLD, in April last, of his experiments in rubber-tree planting.

The General Fire Extinguisher Co.

A NOTABLE event since the beginning of the year has been the organization of the General Fire Extinguisher Co. The leading insurance companies have long felt the need of a competent organization of this character, and its consummation has received therefore general commendation in insurance circles. The fact may be recalled here that Frederick Grinnell was the inventor of the first successful sprinkler of the sensitive type, which at once superseded the sprinklers of the water-joint type, which had the fault of responding too tardily to heat. Mr. Grinnell's invention marked an advance in the sprinkler art, and stimulated the upbuilding of a large business in installing sensitive sprinklers in factories and other buildings. Not all the companies formed to manufacture these devices have realized the too-sanguine expectations of the inventors, and one company after another has retired with a depleted treasury or has been re-organized in the hope of accomplishing better results. Of the few companies surviving the Neracher Co., whose sprinkler is regarded as the closest in approximation to merit to the Grinnell, was already strongly established at Warren, Ohio, and well equipped for sprinkler work in the West. The Providence (R. I.) Steam and Gas Pipe Co., with its original Grinnell sprinkler, and its unrivalled facilities for doing business in the East, joined forces with the Neracher Co., under conditions which assured the success of what is now the General Fire Extinguisher Co.

Heretofore these associate companies, acting separately and as rivals, were seeking business all over the country. When contracts were secured by either, at points remote from their several shops, an obvious disadvantage was incurred as to the cost of transportation of workmen and of materials. Under the present arrangement, however, men and material will go from the general company's nearest shop. It will be observed, too, that the cost of canvassing for contracts will be materially diminished.

With buyers, the status of the automatic sprinkler has been peculiar as compared with that of other apparatus. When the purchase of machinery for the manufacture of goods is under consideration, the question is not which will cost the least, but which will turn out the best or the largest product, and which, in other words, will earn the most money. As regards sprinklers, however, the case is quite different, for sprinklers are not direct earners of money. Frequently, therefore, bids for a sprinkler equipment are invited from the various sprinkler companies and the contract is awarded to the lowest bidder. This course has led to cheap and inefficient installations.

As already intimated, the underwriters have strongly favored an organization of this character. The reason for this is obvious. They are risking capital in every State and it is important, therefore, that whatever risks they may write shall be equipped by a thoroughly competent concern. It is furthermore evident that the general company will endeavor to have the various insurance associations and companies unite on uniform requirements in reference to the installation of sprinklers, instead of the varying, indefinite, and often ill considered requirements of the individual insurance boards in various cities.

The business of installing sprinklers would have been comparatively limited, except for the reduction in the cost of insurance effected thereby. Practically, therefore, it may be said that sprinkler equipments are paid for by the underwriters. It is quite natural therefore that underwriters should recognize with favor, in the General Fire Extinguisher Co., a competent and responsible organization for planning and executing this important sprinkler service in a thorough manner.

The Use of Rubber in Baseballs.

THE number of baseballs made annually in the United States is estimated at several hundred thousand by a baseball manager interviewed for the Washington *Star*. Some of the information given by him follows:

"Nearly all of them are made in Philadelphia and Natick, Mass. Two great concerns in those cities turn them out and other firms buy from them, printing their own trade-marks on the covers. All the league clubs get their balls for nothing, the advertisement they give to a brand by using it being considered an equivalent. This is an important item, inasmuch as half a dozen baseballs are often lost in a single game."

"How are baseballs made?"

"They are made by girls. If you will dissect a baseball, you will find that its internal structure is quite elaborate. Around a spherical core of the best rubber is carefully wrapped a certain amount of yarn. When the ball has thus grown to about two-thirds of the size it is to be, a leather cover is stitched on with a needle and waxed thread. Then more yarn is wound upon it until it is found to turn the scales at precisely the right point. Finally, the outer cover of horsehide is sewn on, and the ball, after being stamped and again weighed, to make sure it is just five ounces, is wrapped in tin-foil and put into a pasteboard box for market."

"There were no such baseballs in old times."

"No, the baseball of to-day was not invented until 1875. And, by the way, the inventor never got a cent for his patent. Twenty years ago a baseball was made with a core of leather strips one ounce in weight, wrapped with yarn and covered. This was found too lively, and so a little sphere of molded rubber of finest quality was substituted for a core. The trouble with a ball thus made was that it could not be depended upon for any given degree of elasticity. No two balls would be just alike in this respect, however carefully they were constructed, and each particular ball varied from day to day, according as the weather was dry or damp. The inner cover now employed has the effect of regulating the elasticity of the ball, at the same time keeping it compact and in shape. Cheap baseballs are made of poor yarn and rubber scraps pressed into a pulp, the lowest grade being composed of nothing more than melted remnants of rubber shoes.

A New Use for an Old Machine.

AN old machine made several years ago for destroying railway tickets has been introduced on a large scale to meet the requirements of the West African rubber merchants in the cutting up of raw rubber into shreds. By this process the moisture is exuded, and the rubber can be packed into less space for shipment. The machine consists of two sets of disks with very sharp edges, carried on a wooden frame. These disks are placed at suitable distances and slightly intersect each other. Above them is a wide-mouthed hopper. Each set of disks, which are driven by hand with ordinary gear, revolves towards the center of the machine, and as the raw rubber is fed into the machine it is immediately grasped and cut into shreds, which are combed out underneath and discharged.—*Philadelphia Bulletin.*

A RUBBER-MAN from across the water speaks of having been especially struck by the cleanliness of the streets of Berlin. It seems the streets there are flushed with water and then scrubbed with rubber-shod brushes that look like exaggerated window cleaners.

THE MECHANICAL RUBBER COMPANY.

THE final step in effecting the combination to be known as the Mechanical Rubber Co., under the charter obtained in New Jersey, on October 14, 1892, occurred in Cleveland, Ohio, on February 15, when Lawyer Virgil P. Kline, representing the Cleveland Rubber Co., filed in the office of the County Recorder a deed transferring the property of the latter to the Mechanical Rubber Co. for $100 and "other valuable considerations." The deed is signed L. K. McClymonds, president, and R. S. Pierce, secretary, of the Cleveland Rubber Co.

The other companies forming the nuclei of the new corporation, as already reported in THE INDIA RUBBER WORLD, are the New York Belting and Packing Co. and the Chicago Rubber Co., each of which has executed deeds of transfer of its factories and other property to the consolidated company. Mr. McClymonds is the president of the Chicago Rubber Co., as well as of the Cleveland Rubber Co., and was largely instrumental in bringing about the new order of things. While the organization of the new company has not been completed, Mr. McClymonds, who has removed to New York, is acting as its vice-president and general-manager. It is stated in the Cleveland newspapers that work will be continued as usual in the factories there, under the same management as before.

The works of the Cleveland company are located at the junction of the Cleveland and Pittsburgh and the Nickel-Plate Railroads. The real estate includes four acres on the Cleveland and Pittsburgh, two acres on the Nickel-Plate line, one and one fourth acres on Lundy street, 361 feet on Ellsworth street, and 40 feet on Lisbon Street.

TRADE AND PERSONAL NOTES.

INAUGURAL day at Washington will be long remembered by many wearers of mackintosh coats, and lucky was the man in the big parade who was clad in one of these popular garments of the day, for it snowed, rained, and blew, as it only does on the 4th of March, every four years. Never before were so many mackintoshes seen in line. A fair estimate of the entire lot that passed up Pennsylvania avenue would not be less than 5000 garments. One club, the Calumet, of Baltimore, had near 1000 members, uniformed in blue tricots. Philadelphia, Chicago, and other cities also sent clubs uniformed in mackintoshes, and a Southern military organization was conspicuous in wearing mackintoshes.

—A good-sized party of rubber-men were in New York last week, among whom were C. C. Peters, of the Sanders Duck & Rubber Co., St. Louis; Albert H. Thompson, Syracuse, N. Y.; and T. N. Conrad, manager of the Patapsco Rubber Co., Baltimore.

—The hose samples shown this year are handsomer than ever before, and a great many novelties are on the market. The stocks are light, and mechanical-rubber manufacturers look for a large demand.

—The Quaker Rubber Co. (Philadelphia), are very busy filling orders for hose, and their belting trade has increased very largely recently.

—One of the best fitted rubber stores for the footwear trade is that of Frank C. Howlett, Syracuse, N. Y. Here a buyer, no matter what sort of foot he has, or what style of rubbers he wants, is almost certain to be suited.

—The Novelty Rubber Co., of Elizabeth, N. J., have filed articles of incorporation with the County-court Clerk, naming as stockholders Robert D. Kay, Henry A. Roth, and Jacob Meloth, of Elizabeth, and Henry Eichold, of New York. The amount of capital named is $25,000.

—A judgment has been filed at Binghamton, N. Y., against H. E. Stone and J. S. Germond, in favor of the Woonsocket Rubber Co., for $2,883.90.

—The Seamless Rubber Co. (New Haven) are preparing plans for a large addition to their building, to be 28 x 120 feet, four stories high. In the middle of the building, on the upper floor, will be a "sun" room, with glass front, where rubber is to be dried.

—In order to make all parts of their steam-pressure regulators interchangeable, as in fire-arms, sewing-machines, etc., the Foster Engineering Co. (of Newark, N. J.) have just entered a large order with the Gisholt Machine Co., of Madison, Wis., for a line of their turret lathes, with all accompanying special tools, to build the different sizes and styles of their regulators and pump-governors.

—The new address of Henry Werner & Co., wholesale dealers in rubber goods at Detroit, Mich., was incorrectly printed in our issue of December 15. They are at No. 366 Gratiot avenue. Mr. Werner is a frequent visitor to New York, where he always finds the time allotted for his visits too short to attend to all the varied interests which concern his Detroit house.

—The Commonwealth Rubber Co., whose offices and warehouse are at No. 54 Vesey street, New York city, announce that they have put in a complete line of mill-supplies in connection with their well-known business of mechanical rubber goods. Their stock now includes leather belting, lace leather, raw-hide and tanned lacing, waste, oils, rubber belting, packing, gaskets, and corrugated matting. The Commonwealth company are known also for their fine mackintoshes and all grades of rubber clothing.

—The publishers of THE INDIA RUBBER WORLD are in receipt of a request from the Census official in charge of statistics of transportation, at Washington, for copies of this paper for 1891 and 1892 for the information which they contain in regard to the export and import business in India-rubber, which would indicate that the paper is securing a reputation outside the trade for information of value upon this subject.

—The Elmwood Hose Co. will hold a ball on the evening of February 24 at East Orange, N. J., to raise funds for purchasing rubber goods for the members of the company.

—The Easthampton (Mass.) Rubber Thread Co. have declared a semi-annual dividend of 6 per cent. for the last half of 1892.

—Percy Blackman, for twenty years connected with the factory of the New York Belting and Packing Co. at Newtown, Conn., has been made the superintendent of that establishment.

—The Standard Rubber Corporation, at Brockton, Mass., are reported by the local newspapers to have received a lot of new machinery.

—The Woonsocket Rubber Co. were among the sufferers by the great fire which visited Boston on March 10. Among the buildings burned was the Ames building, also known as the Horace Partridge building, built by F. L. Ames about three years ago, after the Thanksgiving fire when the building standing on that site was destroyed by fire. The Woonsocket Rubber Co. had their offices on the first floor of the building and suffered a complete loss of their property in the building. The rubber boot-and-shoe jobbing firm of B. F. Jacquith & Co., who were tenants of th fifth floor were also burned out. In the fourth floor were store-rooms rented by the United States Rubber Co., which were also burned.

—The Birmingham Iron Foundry Co. have completed a pair of thirty-ton shears, to cut 4½ inches thick of cold iron for service in the Windsor Lock Steel Works.

—The exports of rubber from Madagascar to the United States for the year ended August 12, 1892, amounted to 45,490 pounds, valued at $42,229.43. The export duties paid were $1728.76.

—The woolen-goods trade say that the demand for cloths from the mackintosh-manufacturers is unprecedented. The season bids fair to be an excellent one, the grades in demand being ordinary and medium. There is a large demand for silks for linings; a 20-cent cloth carrying a dollar silk lining.

—There was a strike of coat-makers employed at the Columbia Rubber Co. (East Braintree, Mass.) on February 7. The strikers claim that they were obliged to do extra work without extra pay.

—The annual election of the Derby Rubber Co. (Shelton, Conn.) was held on February 1. The directors chosen elected the following officials: William C. Atwater, president; Rufus Blake, vice-president; V. A. Page, treasurer; William F. Askam, secretary.

—H. P. Dixey, of Philadelphia, has been appointed assistant secretary of the Rubber Reclaiming Co. to take charge of their local office at Shelton, Conn., to succeed William Colt.

—Mr. William H. Aldredge, superintendent of the Eastern Rubber Manufacturing Co. (Trenton), should feel at home in the plant that he is now running, as he designed numbers of the machines that are in use there, and formerly superintended the concern when it was successfully run.

—A thin rubber bag made in the shape of a foot is being sold by shoe men as an inflater for shoes, keeping them in shape when they are in show windows.

—T. C. Hudson, of Providence, R. I., is the inventor of a pneumatic tire, and is also about to place on the market a rubber cushion for the heels of leather shoes.

—Sayen & Austen, of Philadelphia, report that they have sold five times as many rubber shoes this season as any previous one. Indeed the call was so great that they had hard work to get the goods.

—The Cable Rubber Co., Boston, Mass., have gotten out a very handsome card, with a new trade-mark. The trade-mark consists of the name of the company set in a circle surrounded by a strand of cable while in the center is a sailor's knot made also of cable. The design of the card is exceedingly handsome. On the back is a price-list of carriage-cloth, and drill and duck in all the regular sizes and colors.

—A very attractive advertising device is a view of the World's Columbian Exposition buildings and grounds at Chicago, printed in colors, bearing on the margin a reference to the business of the New York Insulated-Wire Co., Nos. 13-17 Cortlandt street, and Nos. 78-82 Franklin street, Chicago.

—Elegant in design, beautiful in color, and perfect in typography is the mounted card got up by Gies & Co. (Buffalo, N. Y.) for the Stephen Ballard Rubber Co. (New York) displaying the registered trade-mark of the company and giving the price-list of their leading staples. Old Atlas was never pictured to better advantage, and the indescribable greenish tint with the soft pink-hued border and clean-cut type form a lithograph rarely seen in the rubber store. The card is 24 by 16 inches in size, and well illustrated in the pictured descriptions of the goods carried by the company.

—Charles T. Wood, formerly with C. M. Clapp & Co., who has established a rubber-goods agency at No. 67 Chauncy street, Boston, has issued a catalogue of rubber goods under the title of "Wood's A—B—C Rubber List." In it the goods for which he is prepared to receive orders are listed alphabetically, rendering it very convenient to find any particular article wanted.

—Peck Brothers, of New Haven, are out with a new lawn-sprinkler which is said to be one of the best yet made.

—In answer to an inquiry, it may be stated that the Sargent Manufacturing Co. and the Rubber and Celluloid Harness Co., both of Newark, N. J., make metal hooks covered with hard rubber.

—The Russell Manufacturing Co. (Middletown, Conn.) are putting in a plant for making rubber-lined cotton hose.

—People still talk of the "New Jersey Rubber Shoe Co., but to be accurate the name should be written the "New Jersey Factory of the United States Rubber Co."

—The recent cold weather in the South has developed a large market for rubber water-bottles. The State of Florida is sending for large quantities of them.

—The Commonwealth Rubber Co. (New York) are making a specialty of gas-tubing and are marketing the whole output of one factory.

—The modern use for rubber stopples is found in typewriters and sewing-machines. On one typewriter alone over half a million have already been used.

—George S. Willis, of the Cornelius Callahan Co., Boston, is at present receiving a great deal of free advertising from the newspapers of that city, it being claimed that he sells more than his share of fire-hose, which is after all in these days of business enterprise a pretty good recommendation.

—All the carriage-cloth sellers on the road report a very early demand and a large one for drills and ducks, but it is very difficult to get the trade to buy goods of the highest grades. Competition is very sharp, and the great advance in cotton goods keeps the market firm.

—The knights of the grip-sack in and about the Windy City have been greatly exercised over the recent discussions in regard to the space allotted to the rubber companies for exhibits. The Eastern boys all declare that the Westerners have the best positions given them.

—Breck Brothers, of Springfield, Mass., have been running a bargain counter in wringers for a short time only. This is in competition with a dry-goods firm who have inaugurated a sort of competitive warfare. Soon the wringer will be displaced by something else, as the system takes so well that it will be continued indefinitely. Rubber-men are generally like postmasters —neither believing in bargain days—and this is an innovation. Breck Brothers say that the clothing business in Springfield has been better this season than ever was known before. L. M. Baldwin, at Hartford, is not so enthusiastic, but says it has been very good. He is wondering where the demand for the rubber coat and the horse cover has gone.

—In Albany there was little snow until the last of February, and the demand for shoes was dull, while at Utica there have been seventy-five days of consecutive sleighing with the natural result—large sale of footwear.

—Henry Mayell & Son, of Albany, N. Y., celebrated the fortieth anniversary of their commencement in business on March 1, the house having started on that date in 1853. Before them was the grandfather, who came down with the old Knickerbockers, but the rubber business was a side line with him. Governors who graduated to Washington as senators, representatives, and officials of high degree have bought all sorts of rubber-wear of this firm, who look back and think how the business has come up from small things until now when they can only find time to say: "We can hear it grow."

—The breaking of a gear in the Woonsocket Rubber Co.'s "Alice" rubber mill served to disclose the immensity of the machinery used in our rubber manufactories. This wheel was eleven feet in diameter and weighed ten tons, and caused the fly-wheel to be injured in such a way that its fragments flew in all directions. This wrecked the engine-room, but did not injure any person. Had the engine been running at full speed, the damage would have been very great, for in another accident of the same kind in New England about the same time masses of the fly-wheel weighing 200 pounds were thrown 600 feet.

—The Apsley Rubber Co. (Hudson, Mass.) in addition to other improvements, have put in an extensive electric-light plant, and added to this stitching machines, so that they now number 200.

—The Berlin Iron Bridge Co. (East Berlin, Conn.) are at work putting up the roof trusses on the new light and power station for the Electric Light and Power Co., at Syracuse, N. Y.

—Edward Wertheim advises THE INDIA RUBBER WORLD that he has opened an office at Room 403, Omaha building, corner of Van Buren street and Pacific avenue, Chicago. He will remain during the greater part of the year in that city, both as a representative of German exhibitors at the World's Fair and as the exclusive agent in America for the asbestos and rubber goods manufactured by Louis Wertheim, of Frankfort o/M.

—Morgan & Wright (Chicago) announce that, on account of various imitations of their pneumatic tire which have been placed upon the market, they have protected the only possible way in which the "Morgan & Wright" tire can be made by letters patent of the United States, dated January 17, 1893. Their tires were first placed upon the market in the spring of 1892 and have met with a wide measure of success.

—The Tillinghast pneumatic tire has gained a good deal of advertising through a trip made by Harvard Hilliard Wylie, on a wheel equipped with it, between New York and Chicago. Mr. Wylie made the entire trip without any money for traveling expenses, as a result of which he had some entertaining experiences in many of the towns passed. A review of his tour is being published in current numbers of the Chicago *Sportsmen's Review and Bicycle News*.

—The North Shore Traction Co. of Lynn, Mass., have placed the contract for their new car shed with the Berlin Iron Bridge Co. (East Berlin, Conn.) This building will be 103 feet in width and 300 feet in length, constructed entirely of iron and brick in order to have the station fireproof. The same company are also making an addition to a car-shed for the Wilmington (Del.) City Railway Co.

—G. B. Widner, of the American Rubber Co., after spending a few days in New York, has returned to Pennsylvania.

—The Canadian Rubber Co., of Montreal, have added to their machinery a reclaiming plant and a large vulcanizer, both of which were built by W. C. White, of Montreal,

—The latest style rubber shoe has a sort of a tongue, which protects the lacing space on the instep.

—The Indianapolis (Ind.) Rubber Co., incorporated with $25,000 capital on December 5, 1892, began operations on February 23 at Nos. 301–307 East Georgia street. Their principal product will be the "Hoosier" pneumatic tire, of the inner tube type, for which they have applied for letters patent. The company state that they have an order from the Indiana Bicycle Co. for 40,000 of these tires. They will manufacture also a new style which they call the pneumatic-cushion tire, and it is supposed that they will manufacture rubber specialties to order. The officers of the company are H. E. Galloway, president, and John E. Smith, secretary. The superintendent is J. W. Brown.

—The Marvel Rubber Co., the incorporation of which has been mentioned already in this journal, formally organized on February 25, at No. 35 North Main street, Providence, R. I., with an authorized capital of $500,000. The officers elected were Joseph Banigan, president; John J. Conley, secretary-treasurer; and William B. Banigan, general manager. The directorate includes in addition, Patrick Wren and Hiram J. Doughty. The object of the company is to manufacture rubber boots and shoes by a new molding process invented and patented by Messrs. Wren and Doughty.

—At the last annual meeting of the Goodyear's India Rubber Glove-Manufacturing Co., at Naugatuck, Conn., the following directors were elected for the year ensuing: J. D. Vermeule, A. D. Parton, Heman Burr and C. Van Blist, of New York; S. W. Kellogg of Waterbury, Conn.; E. S. Converse of Boston; and Samuel P. Colt of Bristol, R. I. Mr. Kellogg has been a director for thirty-seven consecutive years.

—The tariff rates of freight on rubbers to San Francisco are $4.20 per hundred, and $3.92 by some lines. It is stated that firms in San Francisco have shipped goods for stock by sailing vessel via Cape Horn. The rate is about $1 per hundred, and the time probably four months.—*"Boots and Shoes" Weekly.*

—During 1892 the exports of rubbers to Canada averaged $1.44 per pair, to France 80 cents, and to the United Kingdom 40 cents. The difference in the climates of the three countries can be discerned by the nature of the goods sent, Canada shipments apparently comprising boots as well as shoes.—*"Boots and Shoes" Weekly.*

—A waterproof paste for shoes is given as follows: Melt in an earthen pot Spermaceti 6 parts; India rubber 12 parts, cut very fine. And add 12 parts tallow, 4 parts lard, and 8 parts amber varnish. The India rubber gives the waterproof qualities the grease the preserving, and the varnish the polish, which is said to be excellent.

—*The Shoe and Leather Reporter* (New York) suggests that the makers of India-rubber goods might this year with propriety celebrate the centenary of the introduction of that material among the industries of the world. It was in 1793 that Charles Macintosh, of Glasgow, "applied a naphtha solution of rubber to the surface of two pieces of cloth, then laid them together, passed them between rollers, and thus cemented them together." From these experiments grew the manufacture of mackintosh coats.

—The sailing vessels of the old Merchants' line, owned by W. R. Grace & Co., of New York, are to be superseded by a fleet of steamships plying between this port and the west coast of South America. The first steamer of the new line sailed from New York for Chili and Peru on February 4. She is the *Coya*, a British vessel of 1696 tons, and is scheduled to make the trip in about thirty-five days. The new ships of the line are now building in England. It is expected that one result of this new enterprise will be a new impetus in the trading in rubber on the west coast of South America.

—A recent visit to the factory of the Stoughton Rubber Co., at Stoughton, Mass., revealed a condition of great activity in the order department. Orders were shown for shipment up to June next, and in the shipping department there were goods addressed to nearly every state in the Union. Among the operatives were to be recognized many faces that have been there for years, which speaks well for Superintendent Burnham's popularity and successful management. The Stoughton company are manufacturing the highest grade of clothing, and will make an exhibit at the World's Fair. Their goods are represented in Chicago by William H. Salisbury & Co.

—An importing firm received a cable from Pará the other day which ended "Revolution quelled in Manáos." As no one had heard of any outbreak there, there was much surprise; and as it does not take a great stretch of the imagination to believe anything politically about Brazil, the conundrum was whether this had caused the late rise in the price of rubber, and now had all hands stopped fighting and gone to work. It is thought that there was some error in the code in which the cable was transmitted, as no other house had similar news.

—The Columbia Rubber Works Co., (New York) have been appointed agents for the Seddon Pneumatic Tire Co., of Manchester, England. This tire has made a great reputation in England, and its popularity here is assured. It is not affected by the heat of the sun, a point which the Southern and Western rider will appreciate. The outer cover of this tire is made of red rubber, and has a lining of strong linen canvas vulcanized to the rubber in the usual manner. The inner surface of the outer tube has a coating of rubber in the usual manner but pains are taken to have it very smooth to prevent damage by friction to the air tube. The bearing surface of the tire is enlarged or thickened so as to reduce chances of puncture and prolong the time of wear. The tire is very strong, and at the same time light and pliable. The tire is attached to the rim by means of two wires which run longitudinally and parallel with each other, and are drawn together and coupled by a special tool. These wires will stand a breaking strain of 1200 pounds.

—The National India Rubber Co. (Bristol, R. I.) are very much in need of help. One hundred girls could find employment at their works. It is a pity that a few of the white slaves in New York could not find themselves located at this beautiful spot on Narraganset Bay, hardly out of sight of Newport, in a climate sought for by the very wealthy.

—The sleet-proof boot of the New Brunswick (N. J.) Rubber Co. is having a great run.

—The new French "protecting overshoe" seems to be a combination of an arctic, a gaiter, and a foothold. A pair on exhibition in the window of a New York store do not impress Americans very favorably.

—Twenty-five telegrams in ten hours were what one jobber received for rubbers lately and not one order could he complete.

—The Franklin (Mass.) plant of the Boston Rubber Co. will be largely increased in size before another fall.

—John H. Cheever, of the New York Belting and Packing Co., is at his desk every day and apparently in better health than for years.

—The F. W. Devoe & C. T. Reynolds Co. still supply the trade with the best of zinc-white for rubber work.

The Metropolitan Rubber Co. (New York) are having all they can do to turn out mackintoshes enough to meet their orders.

—The word "Storm," whether in "Storm Slipper" or some other combination that applies to a rubber shoe, belongs to the Boston Rubber Shoe Co., and they are about to suggest this fact to imitators.

—Randolph Brandt, agent for Selden's Packings (New York), has fitted up his Cortlandt-street store very finely and is getting his share of trade.

—The Eastern Electric Cable Co. (Boston) are as busy as can be. With the orders in sight this year's business will about double that of last.

—A call for a formula for making white hard rubber comes from Elmira, N. Y. Who can give it?

—The Monarch Rubber Co. (Brockton, Mass.) have been so successful in their business of proofing cloth for the trade that they are contemplating a further enlargement of their plant.

—The Peerless Rubber Co. (New York) turned out as many goods in the month of January, 1893, as in any three months in 1892. They now have a factory capacity for $1,000,000 a year. Sales-agent Dale is happy, as he deserves to be.

—The National Rubber Co. are having calls for twice as many tennis goods as they had last year at this time.

—King & Goddard (Boston) are having a big trade in the Hall hose-mender.

—Since the installation of their electric-light plant the Home Rubber Co. have been running their hose room all night and still they are snowed under with orders.

—A rubber substitute business is for sale. Chance for some manufacturer to find out what his neighbors use?

—The American Rubber Co. say that the Inauguration at Washington must have boomed the clothing trade there. Mail orders from there have been plentiful ever since. Other dealers say that there never were more overshoes sold in Washington than on that day. The city stores were simply denuded of rubbers.

—To show how stocks have been depleted it is only necessary to say that one of the shoe companies has a three-story warehouse in New York, each floor of the size of 25x180 feet, and on one day last week there were just thirty-five cases of shoes in all that space. The establishment had a very lonesome look.

—F. P. Ball, who was formerly with J. W. Goddard & Sons, millinery merchants, and who has been with the American Rubber Co. in New York, since last October, has assumed charge of the clothing department, in the position formerly held by W. E. Langley. Mr. Ball has charge of the Western and Southern trade coming to New York, and has already won his spurs in the success he has made within the past few weeks in corraling some good trade.

—Studley Brothers (Providence) are having a fine trade in their new Westminster street store, particularly in rubber footwear.

—The Fossil Flour Co. (Providence) will put up a refining plant in Boston, and expect to have supplies for the rubber trade early in the summer,

—The officials of White Plains, N. Y., have invited the Gleason & Bailey Manufacturing Co., of Seneca Falls, N. Y., to construct for the city two elaborate service-hose carriages to cost not less than $2000 for the pair.

—The quaint, old-fashioned bellman advertising the "Bell" brand boots and shoes is a happy thought of the Boston Rubber Co.

—Combination heels of rubber and leather scrap are talked of, but the thought is an old one and the scheme a poor one. Animal substances of any kind are dangerous to mix with rubber. They contain oils that rot the rubber and generate gums that blister.

—The variety of shoes, and fine ones, of new patterns that are being gotten out containing goring, is bewildering, but at the same time it is an excellent thing for the trade.

—The Imperial Rubber Co. (No. 134 Liberty street, New York) have issued an extensive price-list of vulcanized rubber belting, hose, packing, and tubing, with numerous illustrations of the large variety of goods which they offer in these lines. It is an attractive-looking publication and cannot fail to prove of interest and value to the trade.

—The Rubber Reclaiming Co. report an excellent business. They have made many improvements recently in the working capacity of their factories, increasing the output to such an extent as to obviate the necessity of operating all. The Trenton mill is not running, and the factory at Jersey City is idle, both being held in reserve for contingencies, while the Lambertville mill, which is dependent upon water for power, and has been idle for the want of it, will soon resume. The mill at Birmingham, Conn., is sending away 2½ carloads of rubber per day.

—William E. Kelly, of Boston, to whom THE INDIA RUBBER WORLD is indebted for many favors in the past, has taken up his residence in New York city, having formed an alliance with DeLong, Betts & Co.

—H. Bloom, of the American Rubber Co., has been lately attending to the boot and shoe trade of his company in New York city. Naturally he sells more shoes than the company can spare in these peculiar times, and he always goes out with a string tied to him, which is being pulled almost continuously. Mr. Bloom managed, however, to secure some excellent tennis contracts, which are to be filled later on, and in the obtaining of which he is not restricted. He will leave for a trip through New York State about April 1.

—Joseph P. Earle, of Earle Brothers (New York), intends a visit to Bolivia during the coming month in the interest of the Bent Gum Co. lately organized.

—H. P. Emerson (Boston) proprietor of the Emerson rubber works, runs a large commission house, and when he lately applied for space at the World's Fair was refused beeause he was a commission man, rather than a manufacturer, which made him smile.

—The New Jersey Car Spring & Rubber Co. have just added to their plant a new Hughes & Phillips engine, a calender, and several grinders.

—"Buckle Joe" is selling lots of his goods this weather, and is happy; indeed he is always happy, as the posssessor of so good a buckle as the "Hammond" ought to be.

* * *

TRADE PUBLICATIONS.

J. H. KOHMESCHER & Co., No. 30 West Fourth street, Cincinnati, Ohio, have issued the fourth edition of the Illustrated Price-List of their rubber store. This makes a profusely illustrated pamphlet of 113 pages, embracing goods of every class, with specialties of the druggists', surgical, and stationery trades. The catalogue gives the impression of a large stock and a good trade, which is naturally to be expected in the hands of an enterprising firm in so good a business center as Cincinnati.

—Bound in characteristic red is the price-list and catalogue of the Atlas Rubber Co. (New York), a book of 64 pages. The proprietors announce in it that they have purchased the patents pertaining to the Mattson specialty business, and they are now sole manufacturers of the goods. An enumeration of these specialties—mainly water-bags and syringes—with the "Pearl" corset-shield, is the strikingly new feature of the work.

—Mechanical rubber-goods men, in accordance with a custom among hardwaremen, and that practised in some other lines, are in the habit of making a list-price for their goods and then allowing a discount from that to the retailer. This has many advantages, chief among which is that the manufacturer is not compelled to print a new list each time there is a fluctuation in the price. On the other hand, the retailer and the jobber have to make a mental calculation on each bill of goods and the time lost in the aggregate is incalculable. There is a gradual drifting away from this custom, and the American Wringer Co. (New York) in their new catalogue, have joined the ranks of the new departure and make everything "net."

—The illustrated catalogue for 1893 of the Foster Engineering Co. (Nos. 21-23 Prospect street, Newark, N. J.), manufacturers of steam-pressure regulators, pump-governors, and reducing-valves for steam, water, gas, or air; also for the McDowell inside boiler check, is a most satisfactory publication in its method of pointing out the purposes for which their products are intended, and the claims which are made for the same. The Foster valves and the Foster pressure regulator are in use on steamships and railways, and in industrial establishments of a great variety, including rubber-works. There is included in the catalogue a letter from the Cleveland Rubber Co., reporting that the pressure regulator had been in use in their establishment for years on vulcanizing heaters and presses, where they have worked most satisfactorily.

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INDIVIDUAL MENTION.

GEORGE HATCH QUINCY, the Boston selling-agent of the Candee Rubber Co., has removed from the hotel Vendome to the Algonquin Club. He was recently elected chairman of the house committee of the club.

—Mr. E. H. Bennett, treasurer of the Singer Sewing Machine Co., is an enthusiastic yachtsman. He is not only the owner of the steam yacht *Countess*, but has recently bought the *Trophy*, likewise a steam yacht. He has also ordered a sixteen-foot 1-horse-power naphtha launch for the latter-named yacht.

—Mr. James Baird, the Consular agent for the United States at Manáos, has returned to his post after a pleasant vacation in England.

—The first Englishman to adopt the telephone, and in fact the first to see anything in it of commercial value, was Mr. Charles Moseley, the Manchester rubber-manufacturer, uncle of Mr. Moseley of the Mechanical Fabric Co., of Providence, R. I.

—Now that spring is upon us, and fishing is soon in order, the fun-loving are wondering what joke Brother Watkinson will spring on Brother Sage, or *vice versa*. Last year, when the genial jobber went to Connecticut he found the brooks lined with notices that were so authoritative that he forbore to cast a line until he learned that the signs came from the Colchester mill.

—Joseph Banigan, President of the Woonsocket Rubber Co., began life as a jeweler. When he first saw rubber compounded, however, he believed that it held great possibilities, and at once applied himself to the solution of its problems. The result is told in the mills at at Woonsocket and Millville.

—Chester J. Pike, of the Wales-Goodyear Co. (Boston), is the possessor of a pair of horses and a "brake" that make about as natty a turnout as one wishes to ride after.

—A dainty little maiden, by name Ruth Cutler, is a new arrival in the city of Newton, Mass. She is daughter to E. H. Cutler, of the Woonsocket Rubber Co.

—James Bennett Forsyth has gone to Bermuda for a month's vacation. He is accompanied by his brother John.

—A question that is agitating the rubber circles is who is longing most for the opening of the fishing season, W. L. Sage or W. S. Ballou. By the way, the editor of THE INDIA RUBBER WORLD can come in as a close third in that same piscatorial yearning.

RUBBER SALESMEN ON AND OFF THE ROAD.

OUR sketch and portrait this month are of Mr. Henry F. Knowles, the well-known mechanical rubber goods salesman of Boston, and New England agent for the Globe Rubber Works. Every one who knows Mr. Knowles correctly calls him Captain, a title he secured in the late war. It might be well to mention here that Captain Knowles was one of the very youngest of the volunteers from his State to enter the service of his country, he being a boy of but fourteen years old when he joined the boys in blue and went to the front. He served over two years. Ever since those exciting times Captain Knowles has been more or less interested in military affairs, and in 1879–80 he commanded the "Boston Tigers," the crack organization of those days. His career in his present business began in January, 1867, when he went with the Boston Car-Spring Co.

HENRY F. KNOWLES.

He represented their interests in New England and Canada during 1869, on the road. The line was small but Mr. Knowles made a success of it. It was about 1874, in connection with Mr. George Dunbar, under the firm-name of George Dunbar & Co., that the sole selling-agency of the company was taken by the above firm and this arrangement continued until 1879. During the palmy days of the Star Rubber Co. (Trenton, N. J.) and when Mr. C. S. Knowles was their New-England agent, Captain Knowles traveled for the Boston headquarters, selling with success the large line of mechanical rubber goods made by the great Trenton corporation. In 1890 Captain Knowles associated himself with the Globe Rubber Co. as traveler and a short time afterwards took charge of the Globe Rubber Co.'s New England agency where he is still manager. Captain Knowles was born on 1847 in Cape Cod and his long and creditable association with the rubber trade has made him an expert in mechanical rubber goods, and his stock of jokes about how much pure Pará is used in every yard of 15-cent packing, made by his company, can be fully appreciated only by other salesmen who sell packing and other goods, whose compounds are deep mysteries. Still Captain Knowles, like all traveling men, loves a joke and can tell some that are as fresh as five cent competition hose in March. His friends are numbered by the hundreds in the trade as well as among the militia and regular army officers.

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SHORT TRIPS.

SILAS H. JENKINS, Western representative of the Hodgman Rubber Co., is very busy in his new territory.

—James D. Ferguson is at home again from his Western trip, and reports good trade for the Goodyear's India Rubber Glove Manufacturing Co.

—All the salesmen for the Stephen Ballard Rubber Co. (New York) are hard at work on belting and hose.

—The army of Trenton mechanical men are moving homeward, and most of them report an early demand and good sales, especially for small hose.

—The recent exhibition held by the Westminster Kennel Club in the Madison Square Garden, New York, was the grandest display of canines ever seen in the metropolis. It was much enjoyed by not a few rubber-men, who have a great fodnness for dogs, among whom was Charles D. Cugle, of Boyd, Jones & Co. (Baltimore), who is well known as an authority and writer on the British bulldog. Mr. Cugle never misses a dog-show when it is possible to attend one.

—One of the busiest men on the road is Charles F. Hamilton, the well-known representative of the Apsley Rubber Co., Hudson, Mass. Mr. Hamilton met a good many of his friends in Chicago recently, and that city, by the way, is fast becoming a great center for the traveling fraternity in every line of the rubber business.

—Gilbert Congdon, formerly with the late firm of Janney & Congdon, is now in the real-estate business, a line of work for which he has always had a fondness.

—Among very handsome designs in ladies' and gentlemen's fine mackintoshes are those being shown by William Gaylord, who is the popular representative of the Stoughton Rubber Co. for the big seaboard cities of the East.

—The 4th of March in Washington was attended by a genuine March cyclone, which gladdened the hearts of a large lot of rubber salesmen who were on hand and who had hoped for bad weather.

—E. I. Aldrich, of the Boston Rubber Co., is at home after an extended trip through the West. Every shoe salesman has had more orders than his mill could handle; in fact, the demand has been unprecedented.

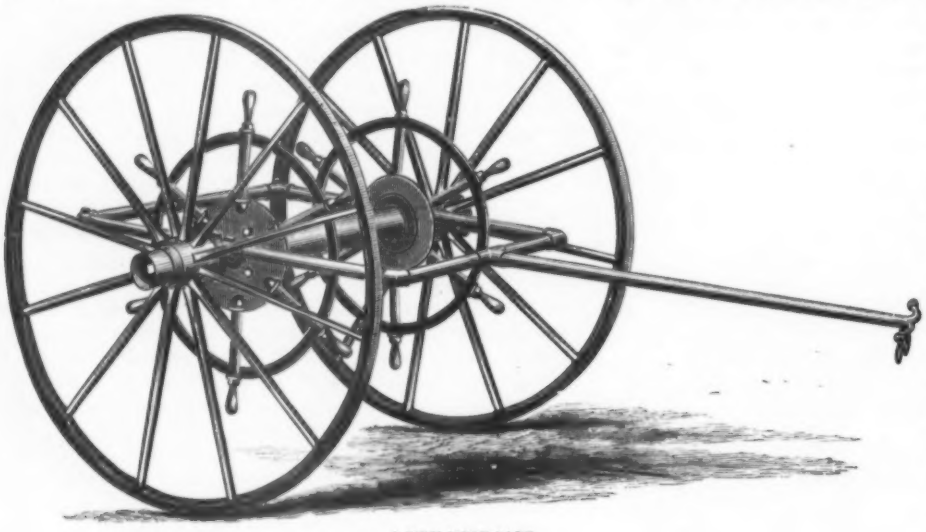
—George H. Payne is making his first trip for the new house in which he is a partner; the same can be said of P. Fogarty, who is also a member of McDonnell, Payne & Co., of Baltimore.

—Charles C. Peters, manager of the Rubber Mechanical Department of the Sanders Duck & Rubber Co., was in Boston recently on business connected with his house. Mr. Peters is one of the best posted men in the trade on mechanical goods, and he has built up a very large trade in the Mound City.

—The new spring samples of the American Rubber Co. (Boston and New York) are out, and their Mr. Bishop is pushing same with much success in his Eastern territory.

The Shoe-Trade Outlook.

PRICES for rubber boots and shoes will be named before the first of April. The situation is somewhat different from what it was one year ago. Then there were fifteen companies to consult and the trouble and solicitude in making the matter solid is beyond the common relating of it. Now there are only four companies to consult, and they are very solid individuals who will now put their feet "under the mahogany" to discuss prices. It is in the air that prices are going up. In the first place, it is believed that rubber will be high, and that there is no reason why manufacturers and jobbers should work early and late for the profits that have been meted out in the contest among fifteen companies who have sold lots of goods, and then anxiously watch for the balance-sheet at the end of the season hoping that they have not lost a great deal of money after all. The jobber gets 12½ per cent. profit, but an advance in prices would help him, and so he is willing. In fact all signs point to an advance, and while the consumer cannot be consulted, and he is a very important factor, it is believed that he will not object to the serious point of withholding his purchases. As usual a great many "thirds" will be made this year. At one time it was hoped in some quarters that the eighteen- and twenty-cent shoe would go, but people will have cheap rubbers for the simple reason that they have not learned to discriminate between good and bad. It has been found upon investigation that more "thirds" have been sold in the past year than of all others, and it has also been found out that the profits in them have been dismally small. The "thirds" will be advanced, and this may be one way of inducing people to buy a better shoe.



A NEW HOSE-CART.

A New Hose-Cart.

THE illustration shown herewith is that of a new type of hose-cart which has recently been introduced and finds a special adaptability for the requirements of large mills, factories, lumber-yards, and industrial establishments generally, covering considerable ground space. It is of tubular-wrought frame throughout, being specially strong and serviceable, and for that reason commending itself to the better class of purchasers. Another grade made by the same firm is composed of wood and wrought frame, and sells for $10 less than the grade illustrated. The manufacturers are The Gleason & Bailey Manufacturing Co., Limited, Nos. 187-189 Mercer street, New York, who will be pleased to give further particulars and supply circulars and catalogues in relation to these carts.

Prices of Rubber Scrap.

OLD rubber boots and shoes have shown a further upward tendency since the last report in this journal. The continued snowstorms and impassable roads throughout the country have made the collection of old boots and shoes almost impossible. Stocks in the hands of dealers are very light, and as many of the large grinders are running short of supply and are in the market, prices have advanced accordingly. The demand for reclaimed rubber by rubber-shoe manufacturers during this winter, has been, and continues, exceedingly brisk, and grinders are running very full, with prospects of a large business for the spring season. Old rubber boots and shoes in carload lots are quoted at 4½ to 4⅝ cents per pound, delivered.

REVIEW OF THE RUBBER MARKETS.

THE rubber market during the past month has been one of quietude. In the preceding month sales had been large and the market was one of buoyancy, but large receipts appearing at Pará, speculators, manipulators, and buyers halted and apathy succeeded hesitation. New York brokers say that the latter part of February was dull enough, but that they are doing nothing now. The receipts at Pará for February were 2000 tons more than expected by the enthusiastic "bull," and as the decrease had begun without any warning, there was a fear that something unusual would happen at the latter end of the crop. Manufacturers bought freely in January and were at the end of that time in no pressing need, so that they accented the situation by going out of the market. Statistically the situation is not very different from what it was one year ago. Then Pará had only moderate stocks of rubber; now it has twice as much. England has only one-third as much, and the United States has 30 per cent. more, but with all these variations, the totals are about the same.

There is some discussion as to the amount of rubber really held in New York at the present time, the variation in the different reports being so much as 300 tons. It is impossible to tell certainly which estimate is correct. This is a part of the battle between the bulls and bears. One month obscure storehouses will be full of hidden rubber and three months afterwards it will all be exposed in the most prominent manner.

Prices have not gone off much,—only two or three cents,—but if the receipts at Pará continue at the lively pace set in February there may be another decline, although it must be remembered that consumption is a strong factor at this time.

The world's visible supply of Pará rubber on February 28, 1893, compared with a date one month before, and one year before, was as follows, amounts being stated in tons:

	February 29, 1892.	February 28, 1893.	January 31, 1893.
United States	830	1070	748
Liverpool	1437	490	1074
Pará	1030	2120	1605
Afloat	788	530	1530
Total	4085	4210	4957

In the above table there is included for February 28, 1893, forty tons of Caucho in Liverpool, twenty tons in the United States, and seventy tons afloat. Under the same date last year there were 100 tons of Caucho in Pará, 15 tons in Liverpool, and 15 tons in the United States.

As for the United States, a majority of brokers claim larger stocks, some as much as 300 tons. The smaller figures are given but not vouched for. The variations in the computations are only mentioned so that no one will be absolutely misled.

The statistical position of Pará rubber in New York is thus reported for February, 1893, as compared with the same month in preceding years:

Stock of Pará here,	January 31,	about	1,900,000 pounds.
Receipts	February,	"	2,990,000 pounds.
Deliveries	February,	"	1,890,000 pounds.
Stock	February 28, 1893,	"	3,000,000 pounds.
Stock	February 28, 1892,	"	1,950,000 pounds.
Stock	February 28, 1891,	"	1,950,000 pounds.

PRICES FOR FEBRUARY.

	1893.		1892.		1891.	
	Fine.	Coarse.	Fine.	Coarse.	Fine.	Coarse.
First	78	55	64	44	87	61
Highest	79	56	67	47	87	62
Lowest	75	53	64	44	84	59
Last	76	53	67	47	87	60

[The stock here is an approximate estimate, but probably larger than it should be, as some parties perhaps state their holdings larger than they really are.]

Africans are tame, with declining prices. There is no feature in them. Centrals continue in scant supply and good demand.

The latest quotations in the New York market are:

Pará, fine, new	75@77	Sierra Leone	24@48
Pará, fine, old	79@81	Benguela	52@53
Pará, coarse, new	53@58	Congo Ball	36@42
Pará, coarse, old	56@60	Small Ball	33@36
Caucho (Peruvian) strip	54@55	Flake, Lump and Ord.	31@33
Caucho (Peruvian) ball	60@62	Mozambique, ed ball	———
Mangabeira, sheet	36@48	Mozambique, white ball	———
Esmeralda, sausage	53@54	Madagascar, pinky	58@62
Guayaquil, strip	40@42	Madagascar, black	42@43
Nicaragua, scrap	53@54	Borneo	28@45
Nicaragua, sheet	51@52	Gutta-percha, fine grade	1.75
Guatemala, sheet	38@43	Gutta-percha, medium	1.15
Thimbles	41@42	Gutta-percha, hard white	1.10
Tongues	35@40	Gutta-percha, lowersorts	nominal.

In regard to the financial situation, Messrs Simpson & Beers, brokers in crude India-rubber and commercial paper, New York, advise us as follows:

"For a good part of February money has ruled the reverse of the previous month, when from phenomenal ease, a brisk demand for call money has prevailed the last half of February; the shifting of loans following the terrible decline in Reading securities aggravated the financial situation. Our banks have been extremely conservative and virtually withdrew from the market as buyers of outside paper pending the announcement of President-elect Cleveland's financial view and policy.

"Rates are nominally 6 to 8% for approved single- and double-name paper, four to six months maturity, with a much restricted business."

TRADING IN RUBBER STOCKS.

DURING the month which has elapsed since our last report the trading in rubber stocks has been very light. It may be mentioned that for some time past nearly all the stocks of the class known in Wall street as "Industrials" have been "weak" as compared with the usual transactions in them. Reference to the table below will show that the sales of "Rubber" for November were almost equal in extent to all the transactions since that time, although the first sales made in November were on the 18th of the month. The daily quotations follow:

		Common.			Preferred.	
Date.	Sales.	High.	Low.	Sales.	High.	Low.
February 13,	1175	46	45	....	....	....
February 14,	250	46⅛	46	....	....	....
February 15,	300	45	44½	....	....	....
February 16,	...	....	....	120	94	94
February 17,	506	44¾	44	229	94	93½
February 18,	375	44	43½	....	....	....
February 20,	510	44⅛	43	46	92½	92½
February 21,	340	44⅛	44¼	20	94½	94½
February 23,	120	44	44	100	94	94
February 24,	100	44	44	....	....	....
February 25,	200	43¾	43½	100	93⅞	93⅛
February 27,	210	43⅜	43	...	....	....
February 28,	....	....	....	....	....	....
March 1,	100	44⅛	44½	100	94	94
March 2,	300	44⅛	44½	....	....	....
March 3,	100	44½	44½	200	94	94
March 4,	....	....	....	....	....	....
March 6,	....	....	....	....	....	....
March 7,	....	....	...	100	94¾	94¾
March 8,	100	44¼	44¼	....	....	....
November	31,208	44¾	38¾	....	....	....
December	15,943	48¾	39	2,607	99	94½
January	9,604	47¼	42½	5,521	99	94
February	7,024	46½	43	1,333	97	92½

THE RUBBER-GOODS TRADE.

THE business in rubber goods is not perhaps so satisfactory in every line as it was a month ago. The weather has been all that could be desired for boots and shoes, but it has interfered to a large extent with the distribution of wares of all sort, made collections poor, and generally restricted the volume of sales. The financial situation has worked into an acute stage, and while this may permeate into the business world, commercial men who speculate count their losses as nothing so far.

From Boston comes the report that the past two months' trade has swept all rubber goods from the market. A large number of Southerners drifted over from Washington after the Inauguration and some good orders were left. West of the Missouri business is excellent, but in the Northwest the snow blockades have interfered sadly with country transportation.

Boot- and shoe-men are tired out. The scarcity of goods and continual explanations necessary to customers have grown wearisome to all concerned. Contracts are not being taken to any extent, the rule being to refuse them. Prices have not been fixed for the season, the cost of rubber being the point in debate. Travelers are idle for this reason, it not being necessary to drum up trade. But little has been done in tennis goods, there being no time to devote to them.

In shoes there is a better demand for sandals than other sorts. The season for warm goods has past. They were scarce a month ago; now it is sandals that are scarce; one sort after another, all winter through, the whole line has passed that gauntlet. Storm-slippers are also in great request.

In mechanical goods there is some disappointment with regard to contracts for hose; and it is thought that the season will not be more than ordinary. Belting and packing are still in large demand, as well as nearly all the goods handled by mechanical-goods men. Manufactories are yet very busy.

In clothing, business is not so good. In this line there is heard some tariff talk, particularly in the woolen trade. The course of wool from the lamb to the customer occupies a period of many months, and with the high tariff also on rubber clothing a hesitating trade for a few months may be expected.

In druggists' sundries, combs, etc., business is reported large.

IMPORTS FROM PARA.

THE imports in detail of rubber direct from Pará at the port of New York, since our last report, have been as follows, all quantities being expressed in pounds:

February 19,—By the steamer *Justin* from Manáos and Pará:

	Fine.	Medium.	Coarse.	Caucho.	Totals.
Reimers & Meyer	108,000	25,400	86,600	200	220,200
New York Commercial Co.	133,900	19,800	52,600	....	206,300
Shipton Green	70,700	12,400	63,000	....	146,100
Joseph Banigan	70,400	12,400	19,200	....	102,000
Boston Rubber Shoe Co.	49,607	8,700	20,000	4,200	82,500
Lawrence, Johnson & Co.	45,200	4,700	8,300	....	58,200
Munehmeyer & Co.	22,900	9,200	....	....	32,100
G. Amsinck & Co.	11,800	1,800	13,700	1,700	29,000
Total	512,500	94,400	263,400	6,100	876,400

February 21.—By the steamer *Allianca* from Pará:

New York Commercial Co.	62,500	11,100	7,300	....	80,900
Lawrence, Johnson & Co.	1,100	....	16,800	.	17,900
Total	63,600	11,100	24,100	....	98,800

February 22.—By the steamer *Advance* from Pará:

Reimers & Meyer	44,800	5,700	27,600	....	78,100
Lawrence, Johnson & Co.	7,500	1,100	8,400	....	17,000
Total	52,300	6,800	36,000	...	95,100

February 24.—By the steamer *Cyril* from Manáos and Pará:

New York Commercial Co.	117,100	21,400	53,600	...	192,100
Reimers & Meyer	60,900	15,300	35,300	...	111,500
Shipton Green	37,200	4,600	22,300	20,900	85,000
Joseph Banigan	40,800	14,300	12,500	....	67,600
Boston Rubber Shoe Co.	38,100	13,800	12,100	...	64,000
G. Amsinck & Co.	31,300	6,700	7,500	....	45,500
Lawrence, Johnson & Co.	18,500	4,200	17,800	....	40,500
For Havre	2,500	....	....	2,300	4,800
Total	346,400	80,300	161,100	23,200	611,000

ARRIVED AT PROVIDENCE:

February 17.—By the schooner *Anna R. Bishop* from Pará:

Joseph Banigan	244,000	62,000	174,000	....	480,000

IMPORTS OF CENTRALS.

BELOW will be found in detail the imports at New York, during February, 1893, of India-rubber from Mexico, Central America, and South America, other than Pará grades:

FEB. 3.—By the *Seneca*=Mexican ports:	POUNDS.
Herman King (Frontera)	150
J. W. Wilson & Co. (Tuxpan)	1,900
Sieger & Gurnsey Co. (Tuxpan)	800
H. Marquandt & Co. (Vera Cruz)	450
Total	3,300
FEB. 3.—By the *Ailsa*=Cartagena:	
W. R. Grace & Co	3,500
Hoadley & Co	900
H. S. Forwood & Co	14,000
Total	18,400
FEB. 4.—By the *Sirius*=Bahia:	
Reimers & Meyer	2,700
FEB. 5.—By the *Panama*=Colon:	
Bock & Co	10,400
FEB. 5.—By the *Alert*=Cartagena:	
W. R. Grace & Co	400
To Order	600
Total	1,000
FEB. 6.—By the *Alps*=Trinidad:	
Thebaud Brothers	6,300
FEB. 8.—By the *Galileo*=Bahia:	
G. A. Alden & Co	600
Reimers & Meyer	3,500
Total	4,100
FEB. 14.—By the *Yumuri*=Mexican ports:	
J. Agostini (Tuxpan)	2,100
FEB. 14.—By the *Cuidad Condal*=Vera Cruz:	
H. Marquardt & Co	300
FEB. 9.—By the *Miranda*=Central America:	
Eggers & Heinlein (Puerto Cortez)	800
J. Agostini (Puerto Cortez)	400
Otto G. Mayer & Co (Cape Gracios)	2,400
Eggers & Heinlein (Cape Gracios)	20,000
A. P. Strout (Greytown)	5,000
Andreas & Co (Greytown)	1,200
Munoz & Esprella (Greytown)	500
Total	30,300
FEB. 9.—By the *Colombia* =Colon:	
G. Amsinck & Co (Panama)	17,500
J. Brandon & Bros. (Panama)	6,596
J. Agostini (Panama)	690
[EX *Puno*=South Pacific ports.]	
Herzel, Feltman & Co	1,200
New York Commercial Co	10,500
J. M. Ceballos & Co.	5,100
Total	41,586
FEB. 20.—By the *City of Pará*=Colon:	
G. Amsinck & Co. (Panama)	1,915
Bock & Co. (Panama)	5,995
Piza, Nephews & Co. (Panama)	405
[EX *Colma*=Central American ports.]	
H. Marquardt & Co	195
Ellsworth & Westervelt	715
Munoz & Esprella	280
Pomares & Cushman	100
Hoadley & Co	915
J. W. Uppermann	1,735
[EX *Quito*=South Pacific ports.]	
G. Amsinck & Co	21,685
W. R. Grace & Co.	15,125
J. M. Ceballos & Co	1,685
Andreas & Co.	8,535
C. Roidan & Van Sickel	6,290
Flint & Co.	4,500
F. G. Pierra & Co	705
Hoadley & Co	785
Y. Kubie & Co	1,035
[EX *Aconcagua*=South Pacific ports.]	
J. M. Ceballos & Co.	1,260
Total	74,090
FEB. 21.—By the *Alva*=Colombian ports:	
Pim Forwood & Co., London (Cartagena)	12,500
W. R. Grace & Co. (Cartagena)	3,000
Ellinger Brothers (Port Limon)	2,400
Total	17,900
FEB. 21.—By the *Argonaut*=Central America:	
Eggers & Heinlein (Cape Gracios)	9,200
A. P. Strout (Greytown)	13,600
Munoz & Esprella (Greytown)	4,400
Andreas & Co. (Greytown)	3,400
Total	30,600
FEB. 21.—By the *Niagara*=Vera Cruz:	
H. Marquardt & Co	200
FEB. 27.—By *City of Alexandria*=Mexican ports:	
J. E. Ward & Co. (Laguna)	450
A. Lefebre (Tuxpan)	150
Total	600
FEB 27.—By the *Alvena*=Port Limon:	
Ellinger Brothers	780
Total Imports of Centrals	244,526
Total for January	222,308
Total for December	208,196
Total for November	297,100
Total for October	207,715
Total for September	140,786

BOSTON ARRIVALS.

FEB. 3.—By the *Norseman*=Liverpool:	POUNDS.
Reimers & Meyer, Africans	40,000
FEB. 3.—By the *Lancastrian*=Liverpool:	
Woonsocket Rubber Co., Africans	29,000
FEB. 9.—By the *Catalonia*=Liverpool:	
Reimers & Meyer, Africans	50,000
FEB. 13.—By the *Kansas*=Liverpool:	
Reimers & Meyer, Fine Pará	11,000
Africans	5,000
FEB. 13.—By the *Milanese*=London:	
Reimers & Meyer, Africans	55,000
FEB. 15.—By the *Persian Monarch*=London:	
Reimers & Meyer, Africans	40,000
George A. Alden & Co., Madagascar	14,863
FEB. 16.—By the *Cambroman*=Liverpool:	
Reimers & Meyer, Africans	35,000
George A. Alden & Co., Africans	6,600
FEB. 18.—By the *Georgian*=Liverpool:	
Joseph Banigan, Africans	48,300
FEB. 21.—By the *British Queen*=London:	
Joseph Banigan, Africans	39,600
George A. Alden & Co., Africans	850
FEB. 21.—By the *Pavonia*=Liverpool:	
Reimers & Meyer, Pará	22,600
Africans	4,500
FEB. 24.—By the *Stockholm City*=London:	
Reimers & Meyer, Africans	3,700
FEB. 25.—By the *Boston City*=London:	
Reimers & Meyer, Africans	16,000
George A. Alden & Co., East India	43,800
Ropes, Emmerton & Co., Madagascar	10,000
FEB. 27.—By the *Croatia*=Hamburg:	
Reimers & Meyer, Africans	50,000
Total Pará	33,600
Total Africans, etc	491,913
Grand Total	825,513
Total Boston Imports, January	309,640
Total for December	255,120
Total for November	297,160
Total for October	100,650